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LITHOGRAPHIC ABSTRACTS - JANUARY 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

TWO VERSATILE LABORATORY COATING MACHINES BASED ON DESIGNS BY SAMUEL B. GRIMSON. Karl Weiss and Frederick T. O'Grady. Journal of the Society of Motion Picture and Television Engineers 66, No. 11, November 1957, pp. 689-691 (3 pages). This paper describes the design and construction of two small coating machines, one for film, and the other for glass. Special features of these machines include the adaptability for use with a variety of coating liquids, the ability to be operated with very small volumes of liquid, and simple means for the accurate control of the layer thickness. The film-coating machine incorporates a new coating head which is especially useful for the application of volatile coating liquids and multilayer coatings. The working principles and performance characteristics are illustrated by typical applications.

REVIEW OF COLD COMPOSITION. Gordon A. Ewing. Modern Lithography 25, No. 1, November 1957, pp. 47-51, 136 (6 pages). The article poses questions that should be considered when a cold composition department is developed to produce film positives and negatives for lithography and gravure processes. The media, Hand Lettering, Handsetting Cold Type, Photo-Lettering and Typewriting, are briefly discussed and the phototypesetting machines, Fotosetter, Linofilm, Monophoto, Photon and the ATF Typesetter are illustrated and described.

*BLACK PIGMENT FOR PHOTOMECHANICALLY REPRODUCED COPY. U. S. Patent 2,719,092, September 27, 1955. Frank A. Grady. Chemical Abstracts 50, No. 1, January 10, 1956, column 100. A pigment for use in photoengraving or lithographic art layout work is a mixture of blue-light-absorbing material (I), an ultra-violet-absorbing material (II), and sufficient C pigment to render it black. I is any common yellow pigment, preferably chrome yellow. II must be a nonfluorescent compound, a useful one being a derivative of 1,3,5-triazine, such as N-(4,6-dihydroxy-1,3,5-triazin-2-yl) dehydrothiotoluidinesulfonic acid or 1,3-bis 4-(4,6-dihydroxy-1,3,5-triazin-2-ylamino) -3-sulfonphenyl urea. Another group of compounds suitable for II are hydrazine

derivatives having the general formulas RNHNHR' and R''C(:O)NHNHC(:O)R''', in which R, R', R'', and R''' are organic radicals. Among the compounds found particularly suitable are 1,2-bis(4-hydroxy-2-naphthoyl)hydrazine, 1,2-bis(2-hydroxy-1-naphthoyl) hydrazine, 1,2-bis(2-furoyl)hydrazine, and 1,2-cinnamoylhydrazine. When the pigment is used in drawings to be reproduced by photomechanical means, highlight drop-outs and vignettes are quickly made by photographing the copy through a half-tone screen for part of the exposure, the final part of the exposure being completed without the screen.

*PREPARATION OF A BLACK PRINTER. British Patent 739,397. J.A.C. Yule (Assigned to Eastman Kodak Co.) Filed in the United States August 27, 1952, and in Great Britain, August 26, 1953. 9 pages. Monthly Abstract Bulletin, vol. 43, No. 7, July 1957, page 435. A black printer, for use in reproducing multicolor originals by scanning a light-sensitive layer with a light beam is made by establishing, in three electric channels, color signals consisting of cyan-, magenta-, and yellow-printer signals derived from the red, green, and blue components of the original, and, in a fourth channel, an electric signal corresponding to the ortholuminous value, i.e., how dark the area appears to the human eye, of the original; reducing the latter signal with the signals derived from at least the cyan- and the magenta-printer signals; and then employing for such scanning a light beam whose intensity is determined by the reduced signal.

RESEARCH ON CONTACT SCREENS (: TONE REPRODUCTION). H. Diehl. Der Polygraph 9: 1048, No. 24, 1956 - 1 page - In German. Monthly Abstract Bulletin, vol. 43, No. 7, July 1957, page 398. Not only the over-all contrast but also the shape of the tone-reproduction curve is affected by the type of paper. The article is illustrated by tone-reproduction curves obtained with various types of paper.

PHOTOTYPESETTING PROGRESS REPORTED TO TYPOGRAPHIC COMPOSITORS. B. Yeo. Printing Equipment Engineer 88, No. 2, November 1957, pp. 30-31, 2 pages. A report to typographic compositors on the ATF's Phototypesetter, Intertype's Fotosetter, Lanston's

Monophoto, Linotype's Linofilm, Photon's Equipment and du Pont's Plastic Plate. Each manufacturer reported on progress and new developments on their respective machines.

PLANOGRAPHIC PRINTING PROCESSES

*TREATING ALUMINUM SURFACES. U. S. Patent 2,811,426 - Application February 21, 1955. Ralph B. Mason - Assigned to Aluminum Company of America. Official Gazette 723, No. 5, October 29, 1957, p. 971. The method of treating an aluminum surface to produce a uniform matte finish which comprises immersing the aluminum surface in a solution maintained at about 150 to 212°F. and made up essentially of about 0.5 to to 4 percent by weight of sodium fluoride, about 0.025 to 1 percent of sodium aluminate, and water, until substantial reaction ceases, and then subjecting the aluminum surface to the action of acid to remove the film formed in the aforesaid solution.

*STENCIL MASTERS. U. S. Patent 2,808,777 - Oct. 8, 1957. A. I. Roshkind - Assigned to A. B. Dick Co. Ansco Abstracts 17, No. 11, November, 1957, p. 486. A .5-5 mil layer of a wax or the like, fusible preferably above 90C, is applied to a fibrous support and in contact with an offset plate and a printed original exposed to light rich in infrared radiation. The absorption of the infrared, which is dissipated elsewhere, by the print causes the wax to flow onto the offset plate and form an ink-receptive image.

*PHOTOPOLMERIZABLE COMPOSITIONS FOR RELIEF IMAGES. U. S. Patent 2,791,504 - Assigned to duPont deNemours and Co. Chem. Abstr. 51, No. 14, 25 July 1957, col. 10282; Printing Abstracts 14, No. 10, October 1957, p. 672. Letterpress printing plates which have uniform printing height are prepared by exposure to actinic light through a process transparency of a photopolymerizable layer (1) coated on a suitable support. I is prepared by coating a polymerizable ethylenically unsaturated composition (II) containing dispersed in it an addition polymerication initiator, e.g., benzoin methyl ether; diacetyl, or 1 : 1^{1}- azodicyclohexanecarbonitrile, which is

activated by light but is not thermally activated below 85°. II is composed of one or more additional polymerizable monomers, e.g. vinylidene compounds, either alone or mixed with preformed compatible condensation or additional polymers and immiscible fillers to obtain the desired viscosity and polymer-formation properties. I should have an optical density less than 0.5/mil thickness and a total density of less than 5.0. Any suitable support to which I adheres can be used, e.g. steel or aluminium plates coated with an adherent resin or polymer which can also contain an anti-halation material.

*FRACTIONATION OF GUM ARABIC BY CHEMICAL AND IMMUNOLOGICAL PROCEDURES. Michael Heidelberger, John Adams, and Zacharias Dische (Columbia University). Journal of the American Chemical Society 78, 1956, 2853-5; Chemical Abstracts 49, 13488b; Chemical Abstracts 50, No. 17, September 10, 1956, column 12516. Gum arabic, as recovered from its specific precipitate with type II antipneumococcus serum, contains only 1/3 to 1/5 as much rhamnose as does the native gum. It is, therefore, a mixture, and no single over-all structural formula can properly be given. Several attempts at chemical fractionation of the gum were less successful and less specific than the serological method. In the chemical fractions the ratio of D-glucuronic acid to L-rhamnose was remarkably constant, but was much higher in the precipitates because of the loss of L-rhamnose. The type-II precipitable portion of the gum does not differ greatly from the remainder with respect to its content of L-arabinose, D-galactose, and D-glucuronic acid. In accord with this finding is the failure of type XIV antipneumococcus serum to fractionate the gum. Precipitation in this instance is due to D-galactose residues in the gum.

*INFLUENCE OF CALCIUM CONTENT UPON VISCOSITY OF GUM ARABIC SOLUTIONS. B. Borkowski and M. Olszak. Acta. Polon. Pharm. 13, 1956, pp. 53-6, (English summary). Chemical Abstracts 50, No. 17, September 10, 1956, column 12516. There is no interdependence between the Ca content and the viscosity of gum solutions. Ca determined by means of the complexon ranged from 0.6345 to 0.9511%.

PAPER AND INK

MEASURING THE HYGROEXPANSIVITY OF PAPER. J. W. Rens. IGT Niews 10, No. 1, January 1957, pp. 1-5 (In Dutch). Bulletin of the Institute of Paper Chemistry 28, No. 1, September 1957, p. 68-69. After reviewing the literature concerning the measurement of "moisture stretch" in paper, a critical comparison of five instrumental methods is made, viz., the Fenschel method, the optical method of Weber and Geib, the Bercovitz method, the Neenah expansimeter method, and the method used by the U. S. Government Printing Office. Most investigators did not correlate their stretch coefficients with the moisture expansions encountered under practical conditions. It is thus difficult to compare the utility of various instruments. The work of Rupp and Krause (Arch. Buchgewerbe u. Gebrauchsgraphik 9, no. 79; 403-8 (1942)) is a noteworthy exception. No data concerning the permissible moisture stretch of paper for offset printing were found.

PRACTICAL TESTS OF PAPERBOARD WATER ABSORBENCY. I. G. Nichol. Package Engineering 2, No. 12, December 1957, pp. 27-30 (4 pages). This article gives several tests for predicting the water absorbency and wettability of paperboard to determine the successful sealing of cartons in high speed cartoning. The tests consist of applying water drops to the paper then measuring the time of absorption and measuring the contact angle of the drops on the paper.

NPIRI DRYING TIME RECORDER. National Printing Ink Research Institute. Doa. 46/16,325; Printing Abstracts, Vol. 12, No. 6, June 1957, page 341. The unit consists of a motor-driven two roll system in which the prints to be tested are fastened on the lower aluminium roll, 3 inches in diameter, and a rubbing surface, usually parchment, is attached to the upper rubber roll. The print and rubbing surface are forced together between the two rolls by a spring loaded lever arm. The two rolls revolving in opposite directions in the nip cause the print to smear as long as the ink is wet. An interval timer permits a choice of intervals between tests of 1 to 60 minutes. The rolls are driven at 1 r.p.m. during the rubbing portion

of the time cycle, which lasts 2 seconds. The time interval chosen for testing is based on the anticipated drying time of the ink. The longer the expected drying time, the longer the interval between tests. Drying times up to 30 hour can be determined directly on the Recorder using 60 minute testing intervals. The Recorder should be operated in a humidity and temperature controlled area for optimum performance. Cost $300-$425, depending on number ordered. (Victor Laboratory, 701 Lechauweki Ave., Bethlehem, Pennsylvania.)

THE I.G.T. PRINTABILITY TESTER AS AN INSTRUMENT FOR MEASURING THE ADHESIVE STRENGTH OF PIGMENT COATED PAPERS. Glen A. Hemstock and John W. Swanson. TAPPI 40, No. 10, October 1957, pp 794-801 (8 pages). In spite of its limitations, it appears that the I.G.T. printability tester can be successfully used for measuring the pick strength of pigment coatings. It is shown that clays do not have a threshold adhesive demand below which no adhesive strength is obtained and that the adhesive demand of a pigment is independent of its surface area. It therefore appears that the amount of adhesive necessary in a formulation for a given pick strength is dependent primarily upon the amount of adhesive migration into raw stock that occurs during drying and the degree of perfection of particle orientation that exists within the dried coating. The subject of preferential adhesive migration will be considered further in a subsequent paper. However, the factors which determine the degree of perfection of particle orientation have not yet been clearly established. It seems unlikely though that the type of film splitting that occurs in modern roll-coating operations lends itself well to the formation of a perfectly oriented coating.

*QUICK-SETTING PRINTING INK. U. S. Patent 2,732,799, January 31, 1956. John H. Haslam. Chemical Abstracts 50, No. 8, April 25, 1956, column 6070. The ink vehicle contains a polymerizable organic polyhydric compound with a molecular weight above 500, and more than one free hydroxyl group. This compound can be rapidly set or insolubilized with a Ti or Zr ortho ester of a primary aliphatic alcohol with 1-8 C atoms. In a typical example, 10 parts by weight of a 30% solution of nitrocellulose

in AcOBu was mulled with 1 part by weight lampblack, printed on paper, and a 50% solution of Bu zirconate applied to the print with a rubber roller. After 1 second the ink was completely dry and non-smearing.

LITHOGRAPHY - GENERAL

RELIEF OFFSET PRINTING - From One Who Has Been Through The Mill. E. W. Thomas. The American Pressman 67, No. 9, August 1957, pp. 14, 16 (2 pages). This summary of experience with this method of printing explains the inability to equal either offset or letterpress results for fine screen work.

WHAT ARE THE PROBLEMS OF RUNNING FOIL BY OFFSET? Gilbert Spillert. New England Printer and Lithographer, 20, No. 9, Oct. 1957, p. 60 (1 page). Foil can be lithographed beautifully and profitably if one stays close to these guide posts: Type of Press to use - Any standard litho-press which will print paper will print laminated foil; Laminated Foil Stock to Use - Litho-Grade laminated foil that has been treated with an offset ink-receptive coating; Inks - Special foil offset inks are required; Litho Plates - Deep-etch zinc and aluminum plates, copperized aluminum and lithure have been used successfully. Albumen plates are not recommended; Drying and Offset Spraying - No extra drying equipment is needed, however, a dry offset spray is recommended. Stack sheets in average lifts of 500 sheets. Use only a minimum amount of fountain solution; Fountain solution - This solution has been used successfully:

Gum arabic	2 ounces
Phosphoric acid	2 ounces
Water	3 gallons

QUALITY CONTROL - RUNNING OF THE PRESS, PART 17. Charles W. Latham. American Printer and Lithographer, Vol. 138, No. 8, August 1957, pp. 28, 30, 32 (3 pages). Instructions for makeready and for running the job are given. The importance of systematic habits and the development of a routine are especially stressed. The various details of good pressmanship are reviewed.

QUALITY CONTROL - GETTING A TRUE DOT. Charles W. Latham. American Printer and Lithographer 138, No. 11, November 1957, pp. 36-38 (3 pages). This part of the series on quality control considers defects in tone reproduction as caused by careless pressmanship and incorrect press mechanical adjustments on an offset press.

OFFSET LITHO PROBLEMS. Charles W. Latham. American Printer and Lithographer, Vol. 138, No. 8, August 1957, page 56. It is not possible for paper and ink to cause streaks. Roller settings and packing methods discussed in preventing streaks and slur in printing.

GRAPHIC ARTS - GENERAL

HOW TO SELECT AND USE INDUSTRIAL MAGNIFIERS. John F. Brandt (Bausch and Lomb Optical Company). Instruments and Automation, Vol. 30, No. 11, November 1957, pp. 2076-79 (4 pages). Six illustrations. One table. A rather thorough discussion of the need for and uses of magnifiers is given here. Such major considerations as working distance, field of view and depth of field are defined, illustrated and explained. The various types of magnifiers available commercially are described and listed.

*ELECTRONIC ENGRAVING. S. W. Levine and A. B. Welch. Journal of the British Institution of Radio Engineers, 16: March 1956, pp. 145-52; Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 403. The halftone printing process is outlined, and the means of achieving it electronically on plastic plates is described. The paper refers mainly to a piece of equipment which effects the engraving by means of a hot cutting-tool and an oscillating flat bed. Electronic devices for tone correction, reproduction of colored copy, and enlargement and reduction are also described.

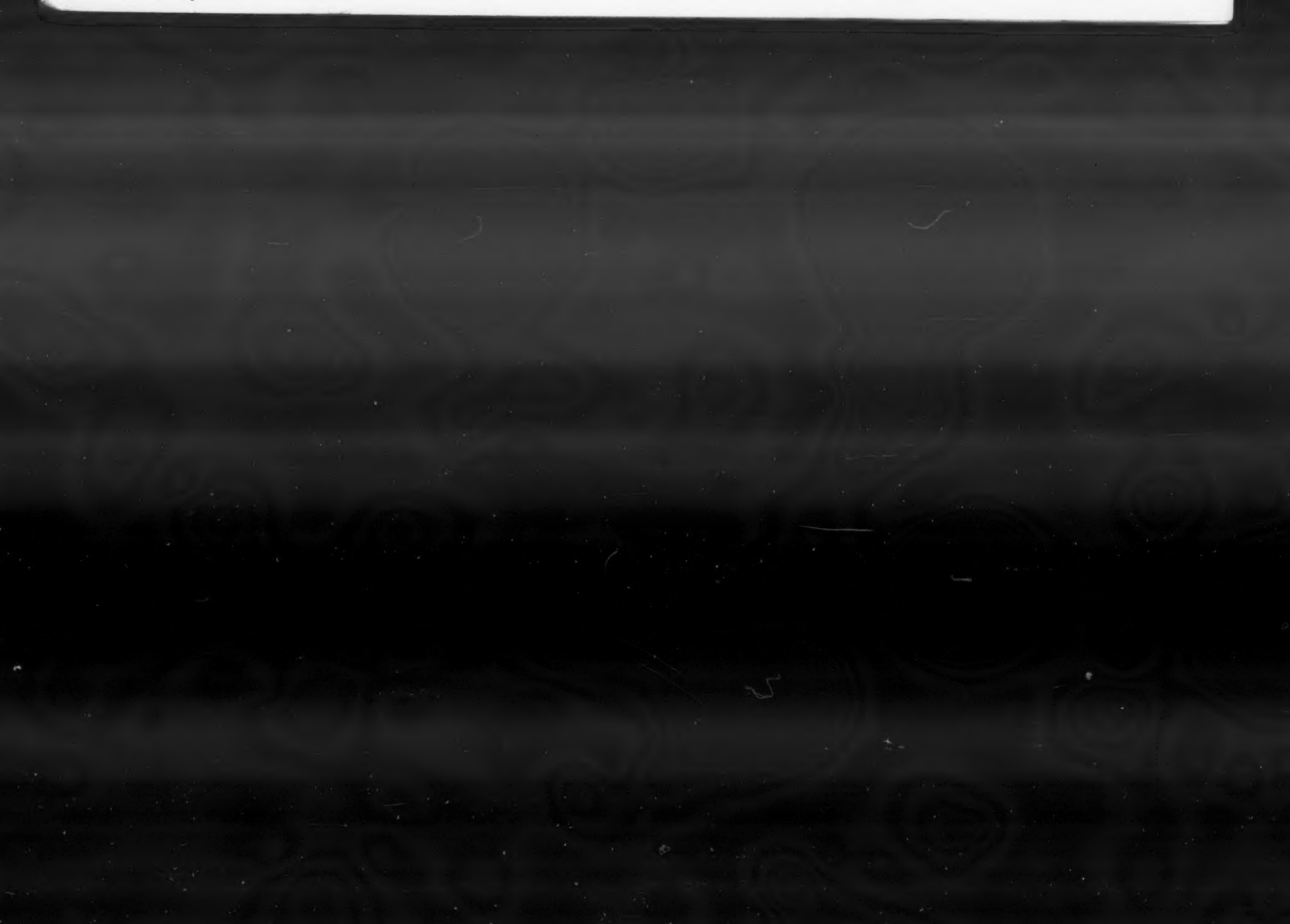
*ELECTROSTATIC PRINTING. U. S. Patent 2,811,465 - Application April 30, 1952. Harold G. Greig - Assigned to Radio Corporation of America. Official Gazette 723, No. 5, October 29, 1957, p. 978. The method of developing latent electrostatic charge images on a record receiving member comprising the steps of applying a substantially uniform distribution of electroscopic developer powder to the surface

of a substantially cylindrical surface capable of retaining, through an attractive force, a quantity of said powder thereon, charging said powder by exposure to a corona discharge, rolling said surface in contact with the surface of a record receiving member bearing a latent electrostatic charge image, and transferring portions of said developer powder to areas of said record receiving member corresponding to said charge image during said contact through an electrostatic attractive force established by said charge image which is greater than said first mentioned attractive force.

*PRINTED CIRCUITS: THE NEXT STAGE. P. Eisler. British Communications and Electronics, Vol. 3, No. 8, 1956, pp. 402-7; Metallurgical Abstracts, Vol. 24, No. 6, February 1957, Column 538; Printing Abstracts, Vol. 12, No. 6, June 1957, Page 372. The usage of copper foil on a sheet of insulation can be extended by the addition of layers incorporating, for example, a film of nickel-chromium alloy for the printing of metal-film resistors. The imprint is made with two acid-resistant inks; the second ink, used for resistor configurations, is soluble only in certain aliphatic hydrocarbons, whilst the first ink, printed on all areas of the copper foil destined to become the connecting network of the circuit, is soluble only in aromatic hydrocarbons. Etching is carried out in ferric chloride, after which the ink over the resistor configuration is removed by the solvent of ink No. 2. The foil so exposed is etched by an agent which dissolves the copper but does not attack Ni-Cr, e.g., $(NH_4)_2S_2O_8$.

AN INVESTIGATION OF THE CHEMICAL CHANGES OCCURRING ON THE SURFACE OF POLYETHYLENE DURING TREATMENT TO RENDER THE SURFACE PRINTABLE. R. A. Hines. Division of Paint, Plastics, and Printing Ink Chemistry 17, No. 2, September 1957, pp. 69-76 (8 pages). This paper describes a study of the chemical changes which occur on the surface of polyethylene when it is rendered printable under conditions which do not increase the temperature required for heat-sealing. From the evidence presented, it appears that

printability is imparted to polyethylene through the formation of a thin film of oxidized, relatively low-molecular weight material on the surface of the polyethylene. There is no reason inherent in the chemical or physical nature of these products why there should be any adverse effect on the heat-seal temperature of properly treated polyethylene.



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LITHOGRAPHIC ABSTRACTS - FEBRUARY 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

*RESOLVING POWER OF COLOR PHOTOGRAPHIC LAYERS AND SHARPNESS OF COLOR PHOTOGRAPHS. W. Grossman. Die Farbe, 5: 89-112, No. 3/6, December, 1956; Monthly Abstract Bulletin, Vol. 43, No. 6, June, 1957, pages 336-337, 2 pages. The resolving power of the single layers of a three-layer color film is mainly influenced by the scattering of light in the silver bromide layers, and it depends unequivocally on the depth. The resolving power of the magenta layer may be considered as mainly responsible for the total resolving power, for the magenta dye produces the strongest luminosity contrast. It is possible to show, by means of statistical experiments, that the impression of sharpness of color pictures depends on the structure of the object. Because of the additional color information, color photographs are judged to have greater sharpness than black-and-white photographs of the same resolution.

*FUNDAMENTAL THEORY OF COLOR REPRODUCTION WITH SUBTRACTIVE PROCESSES. II and III. N. D. Nyberg. Z. wiss. Phot., 51: 1-17, Nos. 1-6, 1956; Monthly Abstract Bulletin, Vol. 43, No. 16, June, 1957, page 360. Color reproduction is conceived as a transformation of color space. A "color space" is defined by the actinic effects of combinations of the synthesis dyes on the three layers of a multilayer material. The effects of overlapping absorptions are discussed.

SCREEN PATTERNS IN PRINTING. Paul McKinney. The American Pressman, Vol. 66, No. 5, April 1956, pp. 16, 17-20, 53-60, 12 pages. The author, the head of the Plate Inspection Department of Fawcett-Dearing Printing Company, discusses moire patterns, particularly with respect to four-color wet printing by letterpress. First reviewing the effects of screen ruling and screen angles on moire patterns, he then examines the causes of exaggerated patterns in wet four-color and suggests ways to minimize them. The article is illustrated with twenty-six color plates of moire patterns and causes.

PROGRESS IN PRINTING HOW NINE NEW ENGLAND PLANTS ARE USING PHOTOCOMPOSITION. New England Printer and Lithographer, Vol. 20, No. 12, January 1958, pp. 69, 70-72 (3 pages). Speed, economy cited as main factors by three commercial shops, two daily newspapers, two trade plants and three specialized firms, total of 65 employees handle about 65% of composition in these plants.

A TEMPERATURE-COMPENSATING DEVICE FOR PHOTOGRAPHIC PROCESSING. D. J. Howe and J.A.C. Yule. Photographic Science and Engineering 1, No. 1, July 1957, pp. 23-27 (5 pages). Ideally, photographic materials are processed for a constant time at a constant temperature. However, adequate control of the temperature often is difficult to achieve. Time-temperature development charts are published for many materials showing development times for other than the recommended temperature which will give approximately equivalent results. A clock control circuit has been built which senses the developer temperature and varies the speed of an electric clock to compensate for changes in the rate of development. Development for the normally recommended time as measured by the temperature-controlled clock automatically achieves the correction indicated by the time-temperature development charts. Compensation equivalent to $\pm$ 1/5F temperature control is achieved over a range of about $\pm$ 4F for black-and-white materials and over a range of about $\pm$ 2F with color materials. The reduced range is necessary because of differences in the temperature coefficients of the three layers of color materials.

QUALITY FACTOR FOR FILTERS WHOSE SPECTRAL TRANSMITTANCES ARE DIFFERENT FROM COLOR MIXTURE CURVES, AND ITS APPLICATION TO COLOR PHOTOGRAPHY. H.E.J. Neugebauer. Journal of the Optical Society of America 46, No. 10, October, 1956, pp. 821-824 (4 pages). Based on the theory of orthogonal color mixture curves first published by D. L. MacAdam, a quality factor q of color filters can be defined which is unity for color mixture curves and a positive proper fraction for all the other filters. The difference 1 - q measures the average amount of errors when an arbitrary filter is used instead of one whose spectral energy response is a color

mixture curve. The theory leads to a rather precise definition of photographic filters that match the usual primaries of color photography and introduce less errors than other filters due to the fact that they fail to be color mixture curves.

PLANOGRAPHIC PRINTING PROCESSES

*PHOTOMECHANICAL REPRODUCTION AND METHOD OF MAKING IMAGES. German Patent 936,371 - Assigned to Kalle and Co. - Filed Dec. 11, 1952. O. Sus; K. Moller. Monthly Abstract Bulletin 43, No. 6, June, 1957, p. 342. A photosensitive material for making positive-working printing plates comprises a layer containing a light-sensitive aromatic o-nitroaldehyde, e.g., O-nitrobenzaldehyde, coated on a support, such as grained aluminum or zinc. The material described is developed in an alkaline solution, e.g., 10 percent sodium carbonate or 15 percent disodium phosphate, treated with an acid, e.g., 1 percent phosphoric acid, and then inked for lithographic printing. An etching agent, such as nitric acid, may be used to make a relief plate for photoengraving. Corresponds to Fr. 1,092,696 and U.S. 2,773,766.

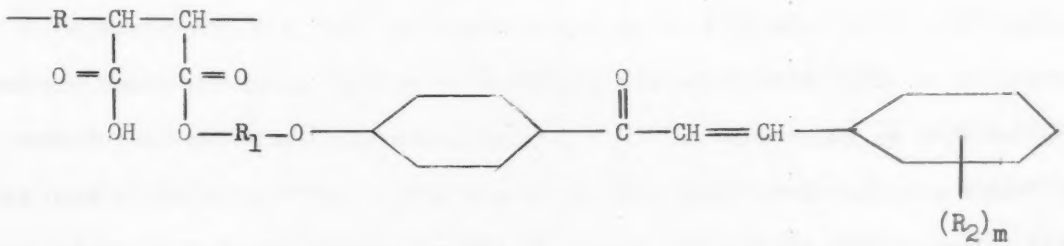
*LIGHT-SENSITIVE MALEIC ANHYDRIDE-AROMATIC AMINE COPOLYMERS. U. S. Patent 2,811,509. D. A. Smith, A. C. Smith, Jr., and C. C. Unruh to Eastman Kodak Company. Ansco Abstracts, Vol. 17, No. 12, December, 1957, page 523. Printing plates for relief images carry as light-sensitive layer a styrene-maleic anhydride or vinyl acetate-maleic anhydride or similar copolymer which has been reacted with an amine such as ethyl 4-aminocinnamate, 3-aminobenzalacetophenone, or 5-aminoacenaphthene. Some such compounds have a light-sensitivity much greater than polyvinylcinnamates. The 6 polymer claims specify a number of groups as units recurring in the products.

PROCESSING THE 3M PHOTO OFFSET PLATE. PART 1 CHARACTERISTICS OF THE PLATE. The American Pressman, Vol. 67, No. 4, March 1957, pp. 33-36, 4 pages. Article is primarily concerned with providing technique information on how to correctly process a 3M presensitized plate. The various materials required are discussed

as well as recommended techniques in handling the thin foil plates with minimum damage. Negative requirements and stripping procedures to produce optimum quality halftones are quite adequately covered.

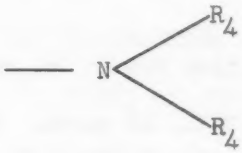
*IMPROVEMENTS IN, OR RELATING TO, PHOTOMECHANICAL REPRODUCTION. British Patent 772,517. A. G. Kalle and Co. Filed in Germany Feb. 6, 1954, and in Great Britain January 11, 1955. Monthly Abstract Bulletin 43, No. 9, September, 1957, p. 531. Claims are made for the preparation of quinoline-3,4-quinone-3-diazide by diazotizing the corresponding 3-amino-4-hydroxyquinoline, followed by treatment with alkali. These compounds, which may be substituted in the benzene ring, are used as light-sensitive elements of a printing plate, which, after exposure under an original, may be developed in alkaline solution.

*POLYMERIC CHALCONES AND THEIR USE AS LIGHT SENSITIVE POLYMERS. U. S. Patent 2,816,091. Albert C. Smith, Jr., Jack L.R. Williams and Cornelius C. Unruh, Rochester, N.Y. assignors to Eastman Kodak Company, Rochester, N. Y. No Drawing Application May 26, 1955, Serial No. 511,418 14 claims (Cl.260-64). Official Gazette, Vol. 725, No. 2, December 10, 1957, page 338. 1. A resinous polymer consisting of from about 20% to substantially 100% by weight of the recurring structural unit:



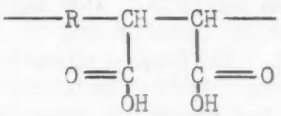
wherein m represents a whole number from 1 to 2, R represents a member selected from the group consisting of a styrene structural unit, a vinyl acetate structural unit, an isopropenyl acetate structural unit, an alkyl acrylate structural unit wherein the alkyl group contains from 1 to 4 carbon atoms, an alkly methy-acrylate structural unit wherein the alkyl group contains from 1 to 4 carbon atoms,

a vinyl alkyl ether structural unit wherein the alkyl group contains from 1 to 4 carbon atoms and an ethylene structural unit, R_1 represents an alkylene group containing from 2 to 3 carbon atoms and R_2 represents a member selected from the group consisting of an atom of hydrogen, a halogen atom, a methylenedioxy group, an alkyl group containing from 1 to 4 carbon atoms, an alkoxy group containing from 1 to 4 carbon atoms, an acetamino group, a $COOR_3$ group wherein R_3 represents a member selected from the group consisting of an atom of hydrogen and an alkali metal atom, an SO_3R_3 group wherein R has the above definition and an



group

wherein R represents an alkyl group containing from 1 to 4 carbon atoms, the remainder of the molecule to make a total of 100% being composed of the recurring structural unit:



wherein R has the above definition.

*PHOTOPOLYMERIZABLE ELEMENTS. U. S. Patent 2,791,504 - Issued May 7, 1957. L. Plambeck, Jr. - Assigned to E.I. duPont de Nemours and Co. Photographic Science and Engineering 1, No. 1, July, 1957, p. 44. Letterpress printing plates are produced by exposing a photopolymerizable layer 10 to a light source through the copy to be reproduced. A lightweight, wear-resistant plate capable of high resolution is the result. The layer comprises an addition polymerizable ethylenically unsaturated compound capable of forming a high polymer and an addition polymerization initiator. Developing preferably is with a blend of ethyl acetate and ethanol which reduces the viscosity of the unpolymerized misture to permit its ready removal by brushing, etc. Numerous examples are given.

*IMPROVEMENTS IN, OR RELATING TO, THE PHOTOMECHANICAL PRODUCTION OF PRINTING PLATES. British Patent 768,065. Kalle and Co. A.G. Filed in Germany April 3, 1954, and in Great Britain, March 9, 1955, 4 pages. Monthly Abstract Bulletin, Vol. 43, No. 6, June, 1957, page 341. A process for producing lithographic images on aluminum makes use of a light-sensitive layer comprising one or more 9-methylenefluorene-2-sulfonic acid aryl amides in which the methylene group is substituted with aryl, aralkyl, or heterocyclic groups. The compound is coated from a suitable solvent, and, after exposure to light, the unexposed areas are removed in a dilute alkaline solution.

*PLANOGRAPHIC PRINT MATERIAL. British Patent 761,493. Chemische Fabriek L. van der Grinten N.V. Filed June 29, 1954, 19 pages. Monthly Abstract Bulletin, Vol. 43, No. 6, June, 1957, page 341. A light-sensitive transfer sheet is prepared by applying, first, a hydrophobic layer of cellulose acetate butyrate containing carbon black to the surface of transparent paper, then applying a hydrophilic layer of gelatin or egg albumin containing magnesium sulfate. The layer then is made light-sensitive with diazoaldehyde, and dried. To form a direct-positive, lithographic printing plate, the sheet is exposed for about 15 seconds to a positive, immersed in water to render the unexposed areas tacky, then pressed into contact with a fine-grained aluminum receiving sheet for about 3 minutes. This sheet is baked for about 1 1/2 minutes at 150°C., and then treated with a conventional gum arabic-phosphoric acid etch, making the bare aluminum areas hydrophilic. The transfer sheet may, or may not, be embossed with a pattern of tiny pyramids to provide an intaglio-relief surface. Both the hydrophobic and hydrophilic layers may contain thermal hardening agents.

*IMPROVEMENTS RELATING TO THE PRODUCTION OF PRINTING BLOCKS BY PHOTOMECHANICAL PROCESSES. British Patent 769,441 - Filed in Germany June 26, 1953 and in Great Britain June 25, 1954. T. Freundorfer; K. Dufey; and H. Horner. Monthly Abstract Bulletin 43, No. 6, June, 1957, p. 342. A method of photomechanically producing

plastic printing blocks makes use of a polyamide material, e.g., a compound of hexamethylene diaminoadipate and caprolactam. A sheet of the material is sensitized with ammonium bichromate or an azo compound which will harden on exposure to light. Alcohol with a 2 percent water content is used to develop the image, which causes the non-hardened areas to swell, and the swollen areas can then be rubbed off, leaving a relief image. If required, a relief image can be produced on both sides of the material by this method.

PAPER AND INK

THE FORCES INVOLVED IN THE TRANSFER OF PRINTING INKS. C. H. Borchers. The Penrose Annual, Vol. 51, 1957, pp. 80-83 plus 4 pages of illustrations (8 pages). A review of the general construction and use of the LTF Pick Tester in the study of many relationships between ink, paper, and blanket materials in lithography. Examples of the oscilloscope traces made by the method are explained in terms of the theory of film splitting under press conditions. Applicability for study of such problems as ink milage, thixotropy, paper and blanket absorbency, and ink receptivity is discussed. Bibliography given.

TOXICITY AND PRINTING INK. National Printing Ink Research Institute, Lehigh University, Bethlehem, Pa. American Ink Maker 35, No. 12, December, 1957, pp. 36, 37, 39 (3 pages). Review of standing of inks in relation to laws governing contamination of foods. Few materials are presently certified by the Food and Drug Administration which are suitable for inks. Economic requirements for prescribed testing are very great relative to the usefulness of any one ink formulation. Ink manufacturers are cautioned not to guarantee non-toxicity and to adopt a generally conservative attitude in dealing with food packagers.

NPIRI STANDARD TEST METHODS FOR PIGMENT IDENTIFICATION. Carolyn E. Moore. American Ink Maker 35, No. 5, May, 1957, pp. 50,51,52,55 (4 pages). Simple, inexpensive, qualitative chemical tests most frequently employed by the average

printing ink maker for pigment identification are described. The tests are for the following pigments: (1) Chromate Pigments, (2) Benzidine Yellow, (3) Hansa Yellow, (4) Phloxine and Rhodamine Toners, (5) Alkali Blue and Tungstated or Molybdated Toners, (6) Iron Blue, (7) Phthalocyanine and Ultra-marine Blues, (8) Sulfide Pigments, (9) Cadmium Red and (10) Titanium Dioxide.

BLEED RESISTANCES OF PIGMENTS. T. E. Ludwig. American Ink Maker 35, No. 5, May 1957, pp. 43-45 (3 pages). The object of this investigation was to determine the principal types of bleed resistances significant for printing ink usages of representative commonly used pigments. The tests and test procedures were selected by a committee of the New York Printing Ink Production Club. Sixteen different bleed tests were selected and a total of 51 organic pigments made by the Sherwin-Williams Co. were tested.

CYCLICIZED RUBBER IN PRINTING INKS. Howard C. Woodruff, Louis J. Sacco, Jr., and Wesley P. Bois. American Ink Maker 35, No. 12, December, 1957, pp. 40,41,79, 81 (4 pages). Alpex, a coined name for cyclicized rubber, is a hard resin with a melting point of 300°F. Alpex is manufactured by Alkydol Laboratories, Inc. of Cicero, Illinois. Being dispersable in solvent mineral oils Alpex produces ink vehicles suitable for offset and letterpress that possess rapid solvent release characteristics. It is claimed that the use of Alpex can give inks quick-set properties, high gloss, and scuff resistance. Other desirable features are extreme alkalin resistance, non-reactivity with color pigments, high refractive index, and low penetration into paper. Two methods are available for reducing or eliminating misting of cyclicized rubber solution: (1) Introduction of a secondary structure that resists elongation, thereby preventing the reorienting snap upon ink splitting. Materials for consideration are talc, certain waxes, bentonite-water combinations, organabentones, etc., (2) Modification of solvent to alter the flow properties of the rubber sol. Small amounts of polar alcohols as eight to eighteen carbon alcohols have observably favorable results. Finally Alpex is compatible with linseed oils (regular and heavy bodied, soyabean oil, alkyd resins and most varnishes).

EVALUATING THE SUTHERLAND INK RUB TEST ON PRINTED FOIL LABELS. Robert S. Davidson. Package Engineering, Vol. II, No. 9, September, 1957, pp. 29-32, 4 pages. The application of this rub test to foil is shown to be of relatively low order of reliability because of the weaker bond of ink to foil compared to that for paper or board. Thus true abrasion resistance is masked by breakdown of the ink film. Scoring of the film by foreign particles is also a factor. Tests indicate cotton duck fabric is the best abrading medium of those tested. Possible industry specifications for a standard procedure are discussed.

LITHOGRAPHY - GENERAL

RACK FOR ALL SIZES OF PLATES. P. R. Russell. Printing Monthly, Vol. 9, No. 9, December, 1957, pp. 4-5, 2 pages. A home-made portable plate rack is illustrated and suggested materials and specifications are given according to plate sizes.

ANOTHER LOOK AT PLANT LAYOUT. Joe Venti. Plaid Proofs, Fall Issue, 1957, pp. 13-16, 4 pages. There are two notions which are widely held as ideals within the printing industry. One notion is that of the "one-floor" plant. Modern architecture and automation are indirectly responsible for influencing this concept, i.e., the "ranch house" and the mechanized "assembly plant." The other notion is that of "flow" being the basic determinant of plant layout. This paper is a critical examination of the "one-floor and flow" concept of plant layout.

OUR LITHOGRAPHIC FUTURE. H. J. Stephens. Lithographers' Journal, Vol. 42, No. 8, November 1957, pp. 20-1, 48-9, 4 pages. A lithographic craftsman expresses his views on technological developments and how they can affect every ALA member.

THE SMALL OFFSET PRESS...ITS FIELD--POSSIBILITIES. G. W. Bassett. The Graphic Arts Teachers' Review 1, No. 2, December 1957, pp. 9-13 (5 pages). The place of the small offset press in the small and large combination shops depends a great deal on size and volume of work now produced by letterpress. Most organizations continue producing the same line of work and allocate jobs according to cost. Included are

new printing markets that might be explored and produced on a small offset press.

*SHEET FEEDER PILE SUPPORT. U. S. Patent 2,815,209 - Application March 30, 1955. Kenneth H. Gulick - Assigned to Harris-Seybold Co., Inc. Official Gazette 725, No. 1, December 3, 1957, p. 113. In a pile support for sheet feeders, side bars for supporting the pile boards of a stack of sheets, means for connecting the forward ends of said side bars comprising two rigid transverse elements pivotally connected with said side bars in a parallelogram arrangement, and freely swingable front and rear supporting cables attached to each side of said support.

*SHEET CONVEYOR MECHANISM. U. S. Patent 2,815,208 - Application August 17, 1953. James R. Wood - Assigned to Harris-Seybold Co., Inc. Official Gazette 725, No. 1, December 3, 1957, pp. 112-113. In sheet conveyor mechanism for a printing machine or the like, a cylinder having sprockets at its ends, a pair of parallel chains traveling over said sprockets, said cylinder comprising a central shaft upon which the sprockets are fixed and two oscillatable shafts parallel to said central shaft, a gripper assembly comprising side plates carried on said chains and a plurality of cross members mounted in said plates, one of the cross members of said assembly being a rotatable shaft carrying gripper fingers and another of said cross members carrying gripper pads cooperating with said fingers, centering blocks carried by said cylinder adapted to receive one of the cross members of said assembly, a locking plate carried by each side plate radially inward from the cross members of said assembly, a first set of collars pivotally mounted on said central shaft, hooks carried thereby adapted to engage said locking plates, a second set of collars pivotally mounted on said central shaft, means carried by each of the collars of said second set for swinging said gripper finger shaft to gripper open position, spring means for returning the shaft to gripper closed position, one of said oscillatable shafts turning one of said sets of collars and the other turning the other of said sets of collars, and cam and lever means actuated by the rotation of said cylinder for oscillating each of said oscillatable shafts as they pass predetermined points in the rotation of said cylinder.

GRAPHIC ARTS - GENERAL

STATIC ELECTRICITY. C. C. Mill. The Penrose Annual 51, 1957, pp. 153-155 (3 pages). A review of principles involved in static generation on presses, especially with regard to the influence of paper surface moisture. Unless pressroom RH is maintained at 60% conditioned paper may become highly charged. Trouble may be reduced by increasing paper conductivity by moistening, or bleeding charge to ground. The latter is accomplished by stretching a fine grounded wire 1/16" over the paper, or by using tinsel or metal brushes. These may be charged with high voltage to increase air breakdown. Alpha or Beta emitters for static reduction are discussed, but electrical neutralizers are thought to have unlimited capacity.

*MULTIPLE COPY TRANSFER PROCESS AND APPARATUS. U. S. Patent 2,812,709 - Application October 21, 1953. Robert W. Gundlach - Assigned to The Haloid Company. Official Gazette 724, No. 2, November 12, 1957, p. 282. The method of forming a plurality of prints from a single original developed xerographic powder particle image comprising electrostatically transferring part of the developed image to a transfer web by applying a first electrostatic field to attract particles to the web and then applying an electrostatic field to repel particles from the web, removing the transfer web carrying thereon the unrepelled particles conforming in configuration to the original developed image from the remaining original powder particle image, and then through at least one more cycle electrostatically transferring part of the remaining original developed image to another transfer web by again applying a first electrostatic field to attract particles and then an electrostatic field to repel particles and removing the new transfer web carrying thereon the unrepelled particles conforming in configuration to the original developed image from the remaining original powder particle image.

*WAX SIPHON SPRAY PROCESS. U. S. Patent 2,817,600. James G. Yahnke. Official Gazette 725, No. 4, December 24, 1957, p. 753. In the method of siphon

spraying wax onto a freshly printed sheet to prevent offset, the steps of melting a wax, siphoning said molten wax into a wax conduit by means of a stream of compressed air discharging past the open end of said wax conduit, mixing said air and liquid wax outside of said conduit upon discharge therefrom and simultaneously dispersing said mixture into small particles by compressed air, and depositing wax particles on said sheet.

*HEAT-SENSITIVE COPYING-PAPER. U. S. Patent 2,813,043 - Application March 28, 1955. Bryce L. Clark - Assigned to Minnesota Mining & Manufacturing Company. Official Gazette 724, No. 2, November 12, 1957, p. 367. A stable, moisture-resistant, heat-sensitive copying-paper capable of providing high-contrast copies of graphic subject-matter by thermographic copying processes as herein described, consisting of a thin, transparent, flexible backing, an intermediate chemically reactive, visibly heat-sensitive coating, the chemical reaction occurring within said coating on heating said sheet being responsible for the visible change, and a visibly opaque protective surface coating providing a strong contrast for visible copy produced in said intermediate coating.

*CONTINUOUS TONE REVERSAL DEVELOPMENT PROCESS. U. S. Patent 2,817,598 - Application Feb. 1, 1955. Richard E. Hayford - Assigned to The Haloid Company. Official Gazette 725, No. 4, December 24, 1957, p. 752. A method of reversely developing a xerographic latent image of determined electrical polarity existing on a photo-conductive surface comprising locating a conductive surface in spaced proximity to said photoconductive surface, applying a charge to said conductive surface of the same polarity as the polarity of the latent image and whose magnitude equals approximately the maximum charge of said latent image, presenting electroscopic powdered material charged to the same polarity as that of said latent image and of said conductive surface into the space between the charged conductive surface and the latent image bearing photoconductive surface to effect deposition of powder particles on the photoconductive surface which is a reversal powder

image of the said latent image thereon, thereafter exposing the reversal powder image carrying photoconductive surface to light to discharge its uncovered areas and subsequently presenting additional electroscopic powder material to the reversal powder image on said photoconductive surface, the polarity of said additional powder material being opposite to that of the charge on the powder in said powder image to effect an additional powder deposit over the original reversal powder image.

*ELECTROFAX DRY-PHOTOGRAPHIC ENLARGER. A. L. Malcarney. Journal Franklin Institute, 261, May 1956, pp. 584-85; Monthly Abstract Bulletin, Vol. 43, No. 6, June 1957, page 325. A new type of dry-process enlarging printer, the R.C.A. Electrofax enlarger-printer, capable of reproducing fifteen standard-size engineering drawings a minute from microfilm originals, was demonstrated recently. The machine is said to be the first enlarger-printer designed for use with the Dexter-developed Film-sort system. The Filmsort system utilizes individual exposures of drawings for reproduction. Each exposure or microfilm frame is mounted on a separate, electric accounting-machine card, in contrast with conventional methods of copying drawings full scale for filing or recording them on continuous rolls of microfilm. Filmsort cards can be selected rapidly according to category by conventional, electric punch-card machines. The R.C.A. Electrofax machine also processes 35-mm roll microfilm. The Electrofax machine has an automatic focus, and can be preset to reproduce up to 500 microfilm originals at one loading, and with as many as twenty-four multiple copies of each one. The Electrofax enlarger-printer can be loaded with as many as 500 Filmsort microfilm cards or with standard 100-ft. reels of 35-mm positive microfilm. The cards are loaded in a rack above the lens system and are dropped automatically in front of the lens at the rate of 1 every 4 seconds. The roll film is fed automatically and horizontally in front of the lens. The microfilm originals - cards or roll - are fed into the lens system automatically at the

rate of 1 frame every 4 seconds. Development is accomplished with special printing paper and a magnetic "brush" developing method. The paper is operated automatically at the rate of 23 linear feet per minute. The whole process, from the time the negatives are loaded in the printer to the rolling up of the finished drawings, is completed at the rate of 1 film every 4 seconds. A batch of 500 Filmsort cards can be processed within 35 minutes to provide five hundred 17- by 22-in. reproductions. The machine is operated from a single, centralized, push-button control panel. No illustrations are included.

*METHOD OF PREPARING A SENSITIZED THERMOGRAPHIC COPY SHEET AND RESULTANT SHEET. U. S. Patent 2,813,042 - Application October 2, 1952. William E. Gordon, Sharon, and Samuel R. Eaton - Assigned to A. B. Dick Co., Inc. Official Gazette 724, No. 2, November 12, 1957, p. 367. An article of manufacture of the type described comprising a non-conductive, relatively non-infra red absorbing base sheet sensitized with the combination of thiourea, a salt of a polyvalent metal capable of reaction at elevated temperature to form a colored reaction product with thiourea and urea present in amounts ranging from equal parts by weight to ten times the weight of the thiourea and polyvalent metal salt.

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LITHOGRAPHIC ABSTRACTS - MARCH 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

*WHAT'S AHEAD. L. E. Varden. Ansco Abstracts, Vol. 17, No. 12, December, 1957, page 509. Modern Photography, January 1958, pp. 34, 36, 38, 3 pages. The new Minnesota-Mining and Mfg. Co.'s microfilm reader-printer produces automatically 8 x 10.5 or 8.5 x 11" prints from 16-mm or 35-mm film frames. The printing material consists of 3 layers: a paper support, thin aluminum laminate and a white photoconductive substance dispersed in a resinous binder. An electrolytic developing unit delivers a practically dry print at a cost of about 7 cents. Attention is called to a material suggested by Wilcke in 1920 which consisted of a glass plate with a thin selenium coating and a paper sheet containing an electrolyte between a transparent platinum or gold layer, and a metal plate as electrodes.

*MATERIAL FOR PHOTOELECTROLYTIC RECORDING. German patent application 1,020,235. J. Berchtold (Switzerland). Ansco Abstracts, Vol. 17, No. 12, December 1957, pp. 517-518, 2 pages. Radiation (light, ultraviolet, infrared, or X-ray) passes through an evaporated gold layer as transparent electrode to a photo-conductive selenium, thallium sulfide or cadmium sulfide coating which is in close contact with a metallic layer conducting in the transverse direction only. Between it and the back electrode the paper for the recording is inserted. It may contain a diazonium salt and amine or phenolic coupler which will react at the cathode when the pH increases, or it may contain a dye which is bleached by chlorine developed from a soluble chloride at the anode by electrolysis. The photoconductive layer may be formed from amorphous selenium particles of 50-120 μ at 50 at., and at first 120C, later 180C. The transversely conducting layer consists of assembled sections of lacquer-coated copper or nickel wire. The required exposure depends on the thickness of the selenium coating (50 μ is recommended) and the applied voltage (4-150 v.).

PRINT TIMER CONTROLS DENSITY AND CONTRAST. James D. Weir. Electronics, Vol. 31, No. 7, February 14, 1958, pp. 108-109, 2 pages. Electronic timer, used to develop photographic prints of consistent quality makes use of phantastron circuit to arrive at the right combination of exposure time and color filter necessary to obtain and repeat the desired exposure values. Timer controls two variables, density and exposure time, to faithfully reproduce the tones of the original scene.

*PREPARATION OF A BLACK PRINTER. British Patent 739,397. Filed in the U.S. Aug. 27, 1952 and in Great Britain Aug. 26, 1953. J.A.C. Yule - Assigned to Eastman Kodak Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 435. A black printer, for use in reproducing multicolor originals by scanning a light-sensitive layer with a light beam, is made by establishing, in three electric channels, color signals consisting of cyan-, magenta-, and yellow-printer signals derived from the red, green, and blue components of the original, and, in a fourth channel, an electric signal corresponding to the ortholuminous value, i.e., how dark the area appears to the human eye, of the original; reducing the latter signal with the signals derived from at least the cyan- and the magenta-printer signals; and then employing for such scanning a light beam whose intensity is determined by the reduced signal.

*IMPROVEMENTS IN BLACK PRINTERS AND ELECTRO-OPTICAL METHODS OF MAKING THEM. British Patent 736,864 - Filed Sept. 8, 1952. J.A.C. Yule - Assigned to Eastman Kodak Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 435. A black printer, suitable for use in four-color printing processes, is prepared by electronically scanning a colored original to produce electrical picture signals corresponding to the three subtractive colors, which, in turn, produce an electrical, black-printer signal dependent upon the sum of two values, one based on the visual tonal density at each picture point of the original, and the other, on the density of the least dense of the three subtractive colors at that picture point.

A light beam of variable intensity, which is controlled by the black-printer signal, scans a light-sensitive layer in synchronization with the scanning of the original; and the layer is then processed to a photographic black printer. The method can be applied to color-corrected, electrical picture signals. Corresponds to U.S. 2,748,190.

PLANOGRAPHIC PRINTING PROCESSES

*SILICATE COATED PRINTING PLATES. British Patent 764,442. Polychrome Corporation. Ansco Abstracts, Vol. 17, No. 10, October 1957, page 430. To give metal plates a water-receptive undercoating they are mechanically grained, preferably by sand-blasting which dents rather than abrades the surface, then given an etch in an alkaline bath of 55-58C (.6% sodium hydroxide, 1.2% tetrasodium pyrophosphate) followed by immersion in a solution of 3% chromium trioxide, 3% sulfuric acid and 3% phosphoric acid, dipping in a sodium silicate solution of 85C, then in a 5% calcium nitrate solution of 25C which hardens the silicate coating, and finally in a phosphoric acid solution of pH 4. The dried plates are sensitized with a diazo solution.-11 method and plate claims.

*LIGHT-SENSITIVE METAL FOIL FOR THE PRODUCTION OF PRINTING PLATES. British Patent 772,650. A.G. Kalle and Co. - Filed in Germany June 18, 1954, and in Great Britain May 25, 1955. Monthly Abstract Bulletin 43, No. 9, September 1957, p. 534. A light-sensitive material for the production of lithographic plates comprises an aluminum foil coated with a layer of diazo sulfonate of an aromatic or heterocyclic amine, a salt-forming, cationic component of which is an aromatic, hydroaromatic, or heterocyclic amine with a primary amino group. Products of this type are claimed to have improved stability and keeping properties.

*INK-RECEPTIVE METAL SALT IMAGES. German Application 1,011,280. E. Gunther and E. Weyde. Ansco Abstracts, Vol. 17, No. 10, October 1957, page 429. A silver image is converted, as in metal salt toning processes, into insoluble metal ferro- or ferricyanides which are capable of accepting greasy inks. Iron, cobalt, nickel,

copper, and uranyl salts are particularly suitable. An example of a conversion solution is a mixture of 4 g cobalt nitrate, 1 g citric acid, 10 g sodium citrate and of 1.2 g potassium ferricyanide in 100 ml water each. Silver images obtained by the silver salt transfer process are readily converted. Before inking, the plates are treated with a surfactant, e.g. a .5% alcoholic solution of stearylamine.

*LITHOGRAPHIC PRINTING PLATE. U. S. Patent 2,794,388 - Filed October 25, 1955. O. W. Lake; C. F. Amering - Assigned to Eastman Kodak Company. Monthly Abstract Bulletin 43, No. 9, September 1957, p. 533. A lithographic printing plate having good ink-receptivity and long press life is prepared by (1) forming, by exposure and development in a gelatin-silver halide emulsion layer, a hardened gelatin image, e.g., according to U.S. 2,596,756 and U.S. 2,716,059; (2) transferring the unhardened gelatin of the emulsion layer to a hydrophilic lithographic printing surface; (3) treating the resultant surface with a solution containing about 4 to 10 percent tannic acid to harden the gelatin image and about 4 to 5 percent thiourea to render the image more ink-receptive; and (4) wetting the surface of the printing plate with water before placing it on an offset printing press.

QUALITY CONTROL APPLIED TO LITHOGRAPHIC PLATEMAKING - Part I. Albert A. Materazzi. Graphic Arts Monthly 30, No. 1, January 1958, pp. 78,80,82,84,86,88,90, 92 (8 pages). In this article Quality Control is defined, its concepts discussed and its principles applied to one lithographic operation - platemaking.

PROCESSING AND RUNNING PRESENSITIZED PLATES. The American Pressman, Vol. 68, No. 8, July 1956, pp. 25-28, 4 pages. Part II of a precise "How to" article primarily designed for the pressman.

PAPER AND INK

MEASUREMENT OF INK MILEAGE. Lars H. Sjodahl. American Ink Maker, Vol. 35, No. 8, August 1957, pp. 32-34, 3 pages. A laboratory method for predicting ink mileage using 40 sheets 6" x 15" on a proofing press with the ink to be used. The press is charged with ink and sheets run until the desired density for the

run is passed. More ink is added to increase the density, and the amount used to reach the desired density again can be calculated with the aid of a graph. Density is measured using a Densichron reflectometer. Accuracy is within 10% of results obtained by analysis of production usage. Results are given for ten inks.

MODE OF ACTION OF FLUORESCENT WHITENING AGENTS AND MEASUREMENT OF THEIR RELATIVE EFFICIENCY. Eugene Allen. Journal of the Optical Society of America, Vol. 47, No. 10, October 1957, pp. 933-943, 11 pages. Fluorescent whitening agents improve the appearance of cloth or paper through two separate visual effects, a bluing effect and a lightening effect; the former is much more important than the latter. For any one shade of whitener, both the bluing and lightening effects are directly proportional to the effective fluorescence (defined here as the sum of the tristimulus values of the fluorescent light from the dyeing). However, when whiteners of different shades are compared at the same effective fluorescence, the greener-shade whitener has more of a lightening effect, but the redder-shade whitener has more of a bluing effect. These two advantages, one for the greener shade and the other for the redder shade, almost exactly cancel each other, so that at the same effective fluorescence both whiteners improve the cloth to the same degree. Effective fluorescence, as here defined, is therefore a reliable indication of whitening power irrespective of shade. This quantity may be measured on a fluorimeter, but an appropriate correction factor must be applied when two different whiteners are being compared.

*PRODUCTION OF CAST SURFACED COATED PAPER. U. S. Patent 2,819,184 - Application October 22, 1953. Robert L. Smith and Frederick H. Frost - Assigned to S. D. Warren Co., Inc. Official Gazette 726, No. 1, January 7, 1958, p. 162. Process for cast-coating paper which comprises applying to a paper base a layer of aqueous coating composition comprising finely divided mineral pigment and hydrophilic adhesive, wetting the surface of the layer of coating with a release agent comprising an alkaline aqueous solution of a normally solid resin, thereafter pressing the

coated surface while still in a wet and plastic condition into adherent contact with a heated finishing surface, and drying the coating in contact with said finishing surface until it no longer adheres thereto.

*GLOSS NUMBER AND ATMOSPHERIC HUMIDITY. H. Troger. Zellstoff u. Papier, Vol. 4, No. 12, December 1955, pp. 370-1 (in German); Bulletin of the Institute of Paper Chemistry, Vol. 27, No. 9, May 1957, p. 991; Printing Abstracts, Vol. 12, No. 9, September 1957, page 567. Nine different writing and printing papers of comparable area weight but of different finish were tested for gloss (smoothness, finish) at different R.H. values (45-85%). At low R.H., the finish changed little with humidity, but at higher R.H. the test values decreased appreciably. With papers of high gloss, significant decreases in the measured values occurred even at R.H. values as low as 55%.

LITHOGRAPHY - GENERAL

LITHOGRAPHER INVENTS PRESS CONTROL DEVICE. Louis M. Bellio. The National Lithographer, Vol. 64, No. 6, June 1957, pp. 12-14, 3 pages. A recently patented control switch for presses is described and compared with another recently developed system, called the "one finger inch, two finger run" scheme. The inventors control depends upon the use of the thumb to actuate the jog and run push buttoms while a pat on the cover of the control box or pressure by the fingers actuates the stop switch.

IMPROVEMENTS IN ALUMINUM AND LAMINATION HAVE SIMPLIFIED PRINTING FOIL BY OFFSET. Donald Pingree and P. T. Pope. The American Pressman, Vol. 68, No. 8, July 1956, pp. 41-44, 4 pages. Production runs on aluminum foil are now stated to be much more practical mainly because of two reasons, firstly that the aluminum foil itself has been greatly improved, and secondly because of new and improved methods for laminating and surface treating the material to receive offset inks. The experience of a multi-color trial run on a web offset press is described.

*DAMPING ROLLER FOR OFFSET PRINTING MACHINES. U. S. Patent 2,821,912 - Application January 5, 1954. Werner Kasermann - Assigned to Color Metal A.G., Zurich, Switzerland. Official Gazette, Vol. 727, No. 1, February 4, 1958, page 60. 1. Damping roller for offset printing machines comprising a cylindrical body part and centric extensions for rotatable support, grooved outer surface portions in said body part extending axially, brush components consisting of bristles and supporting means therefor, a wedge type clamp strip to secure said brush components in the grooves of said outer surface portions, said grooves having side walls lying in a plane parallel to the axis of rotation, the supporting means of said bristles placed between said side walls and said clamp strip, and releasable pressure means cooperating with said wedge type clamp strip to clamp at least one supporting means for said bristles releasably in between of one side wall of said grooves and said wedge type clamp strip, said side walls substantially radially disposed with respect to said cylindrical body part whereby said bristles extend substantially radially beyond said body part.

NEW DEVELOPMENTS IN WEB OFFSET. Douglass E. Murray. Modern Lithographer and Offset Printer 12, December 1957, pp. 26,27,28 (3 pages). Operation of the new web-fed presses is not a difficult matter for the lithographic journeyman familiar with sheet-fed offset. Mechanical similarities of the two methods are described as well as an outline of web press advantages given (illustration).

WANT TO GO OFFSET? Pacific Printer Publisher and Lithographer #6, December 1957, pp. 14,15,16 (3 pages). General comments and practical ideas to consider when converting from letterpress to offset lithography.

THE FUTURE OF LITHOGRAPHY. P. H. Lyle. Lithographer's Journal 42, No. 9, December 1957, pp. 15-18, 49 (5 pages). Substantial developments in the lithographic process have intensified since World War II. The Lithographic Technical Foundation's organized research activity has contributed to definite controls. Through technological progress the over-all costs are generally lower, make-ready

time is shorter and production is most expedient. In the field of commercial printing, work now being done by letterpress could be done more efficiently by the offset process. There are some disadvantages in lithography but they are in the minority and are rapidly being eliminated.

GRAPHIC ARTS - GENERAL

*ELECTROPHOTOGRAPHIC PRINTING ON LUMINOPHORS. V. M. Fridkin and T. N. Gerasimova. Doklady Akad. Nauk S.S.S.R., 113, No. 3, 1957, pp. 571-72 (2 pages); Monthly Abstract Bulletin, Vol. 43, No. 11, November 1957, page 644. Electrophotographic coatings for paper or metal were prepared from dispersions of a copper- or silver-activated zinc-cadmium sulfide phosphor in a phenol-formaldehyde resin. The electrostatic latent image resulting from corona-charging and exposure to light was developed with a mixture of a carrier, e.g., iron filings, and charged particles, e.g., resin.

*CONTROL ELECTRODES FOR XEROGRAPHIC DEVELOPMENT. U.S. Patent 2,784,109. L.E. Walkup. Carbon Black Abstracts, Vol. 6, No. 2, April-June, 1957, page 33. Chemical Abstracts 51, May 10, 1957, column 6414. In the xerographic process, hollow images, false contrast, and weak highlighting are ameliorated by use of a development electrode. Examples are given of a system using a 16-48 mesh soybean-protein carrier and a 20:1 Amberol F-71:carbon black developer powder of 1-20 μ particle size. Similarly connected electrodes can be used to secure xerographic images from liquid sprays of aqueous inks, carbon tetrachloride-graphite suspensions, 10% printer's ink in carbon tetrachloride, 5% spirit dyes in ethanol, 20% aqueous water-soluble mimeograph inks, and 10% lampblack dispersions in methanol.

*XEROGRAPHY. British Patent 778,330. The General Electric Co. Patent Abstract Journal, No. 3560, 3 July, 1957, page 21. Printing Abstracts, Vol. 12, No. 9, September 1957, page 594. A visible picture is produced from a penetrating ray (e.g. high voltage X-ray) image by apparatus comprising an insulating layer on a supporting conductive panel and an electron emissive plate spaced parallel to the

layer and connected to the panel. The layer is first charged and then the panel exposed to the rays to modify the charge pattern.

SOME ASPECTS OF THE APPLICATION OF ELECTRONIC ENGINEERING TO THE PRINTING INDUSTRY. E. B. Humphries. IX International Congress of Master Printers, Report 9, 1957, pp. 6-8 (3 pages). Various aspects of the employment of electronic devices are discussed from the viewpoint of a practicing printer. These uses are discussed under the headings of Memory, Scanning, Typesetting, Photography, Electronic control of register, Bindery, Paper thickness control and Speed Control. The conclusion suggested is that future developments will lead to more extensive use of such devices and to an improvement in both output and quality due to a greater degree of control.

BICHROMATE IN GELATIN RELIEF PRINTING PLATES. Dr. Carl S. Miller. Grafica Scientifica. Graphic Arts Monthly, Vol. 29, No. 12, December 1957, pp. 134, 136, 2 pages. The principle of the Collobloc method of using a bichromated gelatin for the production of a printing plate is discussed. A gelatin coated tissue is coated face down in a bichromate solution and then squeegeed face down on a ferrotype for drying. The dried tissue is exposed, face up through a halftone and then given an overall exposure with the halftone removed. The gelatin layer is now transferred to the base from which printing is to be done. Evidently, the halftone exposure results in spots of chromic salts which are of the same concentration per unit area, on the surface of the gelatin. The overall exposure creates a dilute layer of chromic salts of uniform concentration between the dots. On transferring the gelatin film to the metal base with water, the chromic salts diffuse through the gelatin proportionally to their concentration thus hardening the halftone dots to a greater degree than the areas in between, thus leaving a relief printing plate.

LATEST DEVELOPMENTS IN THE GRAPHIC ARTS PRESENTED BY ROBERT E. ROSSELL. The Electrotypers and Stereotypers Magazine 43, No. 12, December 1957, pp. 12,13, 14,16,18,19,20,21,22,24,25,26,27 (13 pages). A summary of many recent developments

and innovations in electronics and photography for the graphic arts. Instruments, materials and processes discussed include: p. 12 Electronic Scanners; p. 18 Phototypesetters; p. 21 Nylon letterpress plates; p. 22 Photosensitive plastic letterpress plates; p. 22 Autoscreen Film; p. 22 High speed offset web press; p. 21 Collobloc; p. 22 Photographic processor; p. 24 Flexography; p. 24 Screen Process printing; p. 24 Xerography; p. 25 Electrofax (photographic printing); p. 27 Brightype.

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LITHOGRAPHIC ABSTRACTS

Compiled by the Research Department of the
LITHOGRAPHIC TECHNICAL FOUNDATION

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LITHOGRAPHIC ABSTRACTS - APRIL 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

HIGHLIGHTS OF THE LTF SURVEY OF PROCESS COLOR INKS. Frank Preucil. 9th Annual TAGA Proceedings, Part B, May 1957, pp. 143-152 (10 pages). An industry-wide survey with the goal of fuller understanding of lithographic color reproduction problems is reported. A 21 step test color strip printed with production runs by 170 single color, two color, and four color presses is studied for differences which can affect requirements of color correction. Hue purity, gray balance, trapping, additivity, proportionality and other factors are measured as variables to be considered in relating masking to color separation.

COLOR DIFFERENTIATION IN REPRODUCTION PROCESSES. J. A. C. Yule. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 29-41 (13 pages). The paper describes a method of calculating how accurately small color differences between two colors in an original will be reproduced. In order to do this, the following data are required: (1) measurements of the color densities of the individual inks, (2) information as to the way in which the multicolor print is related to the individual ink images, (3) the tone rendering of the individual ink images, (4) the characteristics of any masking method which is a part of the reproduction process. The differentiation of nearly neutral colors has been worked out for a number of typical conditions. It is shown that straight-line masks cause overcorrection of the shadows in a three-color process, owing to both additivity and proportionality failure. The effect of the black printer in destroying color differentiation in the shadows is also shown.

SATURATION CONTROL BY WHITE-LIGHT MASKING IN COLOR SEPARATION: GAMMA 1.0 WHITE-LIGHT MASK. Warren L. Rhodes and Sven Ahrenkilde. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 65-68 (4 pages). One of the problems encountered in color reproduction processes is that

of rendition of proper saturation. The following report aims at illustrating the effect obtained by altering the gamma of the separations. For the purpose of this investigation the tone reproduction was isolated from the study of the saturation control by a "white-light" mask, so that the brightness of the transparency was reduced to approximately the same level. Halftones were made from the separations, and prints produced by offset printing.

SEPARATION NEGATIVE CHARACTERISTICS FOR PHOTOMECHANICAL REPRODUCTION. F. R. Clapper. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 55-64 (10 pages). The basic characteristics desirable in separation negatives for color-reproduction work are graphically illustrated by following a simplified photomechanical reproduction process. A technique of flashing the separation negatives has been worked out with which these characteristics can be obtained in practice. This controlled flash technique actually simplifies the making of separation negatives, since image exposure and development time can be standardized for any given masking procedure. The determination of flash exposure is outlined, and can easily be made from simple density measurements on the copy being reproduced. Other beneficial effects derived in color-reproduction work from using flashed separation negatives are described.

A SYSTEM OF STANDARDIZED ILLUMINATION FOR COLOR VIEWING IN THE GRAPHIC ARTS. Joseph Crossley and Joseph G. Jordan. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 101-106 (6 pages). In order to insure consistency in comparisons and criticisms among color originals, engravers proofs, and press sheets, Springdale Laboratories developed a system of standardized illumination which has been installed for use by photographers, art editors, engravers and printers. The factors which were studied before adopting the system were: geometry of the light source and viewing area, level of illumination, color temperature of the source, and spectral energy distribution of the source. Neither the chromaticity nor the color temperature alone is adequate as a specification of the color quality of the light.

The spectral energy distribution must fulfill certain requirements, and the spectral energy distributions of transparency viewers and overhead illuminators must be approximately the same. The units which have been adopted include overhead illuminators with a combination of fluorescent and incandescent sources, giving an illumination level of 190 foot candles at the working surface at a color temperature of about 3600°K; and transparency viewers with the same type sources giving a brightness of 500 foot lamberts. Wherever these units have been installed they have been received enthusiastically and for the most critical color viewing the system is preferred to any previously used.

FAIRCHILD EXPERIMENTAL ELECTRONIC COLOR CORRECTION INVESTIGATION. M. Farber. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 123-132 (10 pages). Fairchild's investigation of electronic color correction during the last several years is reviewed. The results show the feasibility of direct halftone screening of corrected color separations from transparencies. The masking corrections are linear; certain other corrections, derived from an inversion of Neugebauer's equations, do not seem completely necessary. The simplicity and value of the corrections are dependent on the method of making a contrast adjustment. The primary signals fed to the masking computer represent a gamma of about one-half the gamma of a neutral scale while the ratios of the primary signals are preserved.

ELECTRONIC COLOR SCANNING AND ENGRAVING. Samuel W. Levine. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 107-122 (16 pages). A review is made of the activities of all known companies working on the development of electronic color scanners and electronic engravers for the graphic arts field. The work of each company is presented in some detail and the characteristics of the machines are given. A chart showing the comparative specifications of each machine is presented. In addition to electronic color scanners, the activities of the several companies working on direct electronic engraving and similar devices are reviewed.

A STUDY OF ARC LAMP PERFORMANCE. R. N. Norman and W. L. Rhodes. 9th Annual TAGA Proceedings, Part B, May 1957, pp. 173-180 (8 pages). In this study the changes in intensity, color, voltage and current with time were observed. A special device was constructed so that these changes could be observed simultaneously and at relatively short intervals. The data were collected by photographing the dials of an exposure meter, a voltmeter, an ammeter, and an interval timer. Visual red, green, blue, and ultraviolet filters were placed in front of the lightmeter. The photometric information was converted to watts/cm^2/10mu units. The illustrations show the variation of lamps with time as well as differences among lamps.

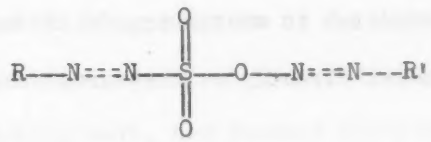
MORE THOUGHTS ON MASKING. Frank H. Smith. Modern Lithography 25, No. 9, September 1957, pp. 51,52,53,165 (4 pages). An experiment with projection masking is reviewed. The production details are followed through in masking a color transparency which will have superimposed color lettering.

PLANOGRAPHIC PRINTING PROCESSES

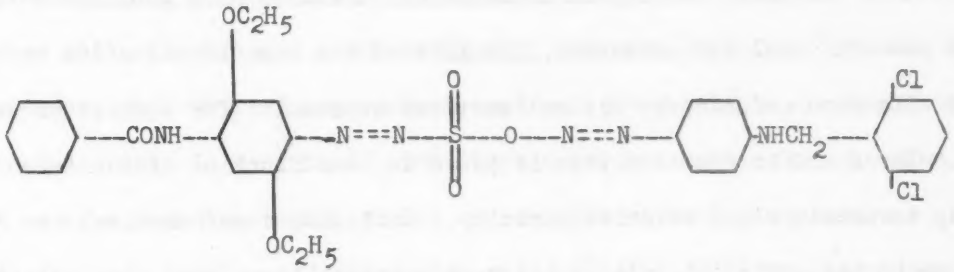
*CASEIN CONTAINING LITHOGRAPH COATING. U. S. Patent 2,822,280 - Application August 3, 1953. William H. Martin - Assigned to Harris-Seybold Co., Inc. Official Gazette, Vol. 727, No. 1, February 4, 1958, page 152. 2. A lithographic coating composition consisting essentially of a water-soluble reaction product of dissolved albumen and dissolved casein in water, with elimination of precipitated matter, said reaction product being formed from a mixture consisting essentially of about 5 to 95 per cent albumen and about 5 to 95 per cent casein and having a pH of about 8.0 to 10.3, and a sufficient amount of a chromium compound providing hexavalent chromium in water to provide light sensitivity.

*PRINTING-PLATE MATERIALS. German Patent 949,383, August 27, 1954. O. Sus; G. Werner - Assigned to Kalle and Co. A.-G., 8 pages. Monthly Abstract Bulletin, Vol. 43, No. 10, October, 1957, page 592. A light-sensitive metal foil, that is useful in making printing plates, comprises a support, e.g., aluminum foil,

bearing a light-sensitive layer containing a diazosulfonate, prepared by the reaction of an alkali salt of an aromatic or heterocyclic diazosulfonate with a diazonium salt of an aromatic or heterocyclic amine, and having the formula,



in which R and R' represent an aromatic or heterocyclic radical. An example is the following compound.



OFFSET PLATEMAKING. Adam Henri Reiser. Printing Equipment Engineer 88, No. 5, February 1958, pp. 31-32 (2 pages). Why various kinds of plates are used; why different images are used; why plates are grained; general discussion on making offset printing plates.

LITHOGRAPHIC REPRODUCTION DIRECTLY FROM XEROGRAPHIC PLATES. John J. Rheinfrank, Philip F. Kurz and Frederick C. Myers. 9th Annual TAGA Proceedings, Part B, May 1957, pp. 133-142 (10 pages). Major advancements have been made in the preparation of lithographic plates by xerography. This paper describes and illustrates one of these advances - the development of a practical process for using the xerographic plate itself as a lithographic printing surface. Today, good lithographic plates can be prepared of both line subjects and halftone subjects, and it is no longer necessary to transfer the xerographic image from the xerographic plate to a lithographic printing surface. In this process, xerographic images are prepared and fixed directly on a special type of

xerographic plate, and the nonimage areas of the xerographic plate are then made water receptive. The resulting lithographic plate is placed on a conventional offset lithographic press and prints are prepared by conventional lithographic procedures. Research is continuing, with emphasis on devising technique for halftoning images directly on the xerographic plate in a process camera.

THE KINETICS OF THE DARK REACTION IN BICHROMATED COLLOIDS. Grant C. Beutner. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 23-28 (6 pages). The kinetics of the dark reaction in lithographic coatings have been found to provide a powerful tool for research. The path of the dark reaction can be described with good accuracy by the mathematical expression for a first order reaction. The specific reaction rate is found to be a function of the two variables, temperature and relative humidity. Utilizing a mathematical expression employing empirical data it has been possible to predict with relative ease the shelf life of a number of different coatings. The paper introduces the concept of "half life" into lithographic terminology and is concerned largely with the classical derivation and practical verification of the first order chemical equation.

A STUDY OF POLYVINYL ALCOHOL PHOTORESISTS. S. F. Darling and G. R. Sears. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 15-21 (7 pages). Polyvinyl alcohol (PVA) photoresists came into use in this country because of the need for a material that was usable with magnesium plates in the Dow etching process. The resist consists of a water solution of low viscosity PVA and a preservative. It is sensitized, in the usual way, with ammonium dichromate. The shelf life of the sensitized resist is short compared to that of cold-top enamels. After exposure the print is developed in water, or in a water solution of a dye which makes visual observation of the image more convenient. The print may or may not be further insolubilized by a "fixing" step, prior to drying and burning in. Only

a moderate temperature is required for burning in and, hence, the resist may be used on zinc or magnesium plates. This paper presents the results of an investigation of the stability of sensitized PVA solutions, the effect of dichromate-PVA ratio on photosensitivity, the mechanism of development and fixation of prints, the effect of film thickness on photosensitivity and on the integrity of the film in the Dow etching bath, and factors affecting the useful life of sensitized magnesium plates.

*DEVELOPMENT OF A PHOTORESIST FOR ETCHING DESIGNS IN GLASS. C. I. Pope and R. Davis. Journal of Research of the National Bureau of Standards 55, No. 3, September 1955, pp. 139-42, 4 pages; Monthly Abstract Bulletin, Vol. 43, No. 10, October 1957, page 595. The preparation of a light-sensitive coating from phenol-formaldehyde resin is described. The light-sensitive coating may be used as a resist or as a mask in etching scales or reticule patterns in glass. A new etching solution was developed for use with this resist, and it is also suitable for fine-line etching with wax resists.

PAPER AND INK

CONTROL OF SHEET MOISTURE. John F. Langmaid, Jr. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 87-100 (14 pages). Proper moisture level with a minimum of variability is necessary in paper to insure good performance on the press. The proper moisture content varies with the class of paper and the conditions under which it is to be printed. Moisture determinations can be made in a number of ways. The most practical and most widely used method is with the Cambridge Sword Hygrometer. Close calibration and proper use is required of the sword. For use in controlling moisture on the paper machines it is necessary to find the relationship between sword readings and percent moisture in the paper. Control of moisture on the paper machine can be accomplished automatically by different methods. Preventing loss of moisture during cutting and inspection is accomplished by

proper humidification of buildings. Higher level of moisture and more uniformity in paper going to the customer is realized.

TECHNICAL ANALYSIS OF PAPER PROPERTIES. Curtis W. Ingalls and J. Marvin Forsberg. 9th Annual TAGA Proceedings, Part B, May 1957, pp. 163-171 (9 pages). Progress toward automation in check handling necessitated a study to determine the extent that check paper could be improved to fulfill the requirements of automatic check handling systems. Correlation coefficients, based on 250 samplings and about 1,000 tests, have been determined between some of the basic physical properties of 24# and 26# sulfite stock, both watermarked and unwatermarked. This study facilitated the improvement of the quality of the paper purchased by The Todd Company, Inc. by a marked degree.

INFLUENCE OF INK PROPERTIES ON TRANSFER DURING PRINTING. A. C. Zettlemoyer, R. F. Scarr and W. D. Schaeffer. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 75-85 (11 pages). Previously, ink transferred during printing was divided into that immobilized by the paper during the dwell time and that which splits from the remainder. The latter portion might be called the "free" ink split. The relation of the free ink transferred during printing to the rheological properties of the ink has now been explored. The fraction of the free ink film which split to the stock has been correlated with the rheological functions: plastic viscosity, yield value, and Inkometer readings; however, no systematic effects due to vehicle or pigment were apparent. The "shortness" of ink expressed as the ratio of yield value to plastic viscosity provided inverse linear correlations with the film splitting behavior. Separate correlations were obtained for each vehicle system. Effects of vehicle viscosity, vehicle polarity and adsorbed moisture at the pigment-vehicle interface were found. A mechanism of film splitting is described which qualitatively explains the influence of ink shortness. The ink film passes through a region of no shear just prior to splitting; consequently, the critical step in splitting appears to occur at or near zero rates of shear.

MEASUREMENT OF INK MILEAGE. Lars H. Sjodahl. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 69-73 (5 pages). A laboratory technique has been developed by which the amount of ink required to produce a depth of color on a given paper or board stock can be determined. It requires very little board and ink and considerably less time than production runs. Accuracy appears to be well within 10% of results obtained by analysis of production usage, which are themselves variable. The merits and deficiencies of the method are discussed.

HIGH SPEED CAMERA STUDIES OF INK MISTING. James W. Howard and Wilbur L. Jones. 9th Annual TAGA Proceedings, Part B, May 1957, pp. 153-162 (10 pages). Studies of the behavior of ink in motion on an ink distribution system have been continued. This current film is the result of continued efforts to investigate the origin of ink mist. Rupture of ink filaments as a source of ink mist has been confirmed, but the studies indicate that the phenomenon is more complex than had been realized. The ridging shown in previous work has been studied further. Attempts to investigate the effect of cavitation and entrapped air on the ink emerging from the nip have been made. There is some evidence that the type of ridging which occurs may influence the behavior of the ink in the nip. A somewhat spongy, porous mass of ink comes out of the nip when the viscosity and rotational speed are high, and this may be responsible for the short, shred-like filaments and irregular shaped particles which we observed. The paper is presented as a moving picture of oil inks running on an Inkometer at normal film thickness and speeds comparable to normal press speeds. The pictures were taken with a Fastax camera at speeds of up to 8,000 frames per second.

LITHOGRAPHY - GENERAL

*OFFSET PRINTING PRESS. U. S. Patent 2,821,134 - Application November 24, 1954. G. R. Brodie - Assigned to Fred'k H. Levey Co., Inc. Official Gazette, Vol. 726, No. 4, January 28, 1958, page 682. 1. In a web-fed, offset printing press comprising

an impression cylinder, a blanket cylinder, and a plate cylinder rotatably mounted on parallel axes, each having a substantial continuous, smooth peripheral surface, means for passing a continuous web between the impression and blanket cylinders, the blanket cylinder comprising means for securing a blanket about the periphery thereof forming a blanket seam running parallel to the axis of said cylinder, the plate cylinder comprising means for securing to the peripheral surface thereof a printing plate bearing images of pages of equal length, equally spaced circumferentially of the plate cylinder so as to provide equal intervening page margins, the blanket cylinder being adapted to operate in rolling contact simultaneously with the impression cylinder and the plate cylinder, the circumference of the blanket cylinder, with the blanket attached, being equal to the circumference of the plate cylinder, with the plate attached, so that the blanket seam will invariably fall within a page margin on the plate, the improvement which comprises so positioning the axis of the plate cylinder with respect to the axes of the blanket cylinder and the impression cylinder that it will lie in a plane passing through the axis of the blanket cylinder forming with the plane passing through the axis of the blanket cylinder and the axis of the impression cylinder an angle determined by dividing 360° by the number of page margins about the plate cylinder and multiplying the quotient thereof by an integer not greater than 1 less than the number of said page margins, and thereby causing the blanket seam to pass in contact with the plate cylinder at an instant when no page image on the blanket is in contact with the web passing about the impression cylinder.

MAKING THE PRESS PRODUCE. Charles F. Geese. National Lithographer 65, No. 1, January 1958, pp. 24, 89 (2 pages). A step by step procedure for determining the amount of undercut on offset press cylinders and suggestions for keeping the cylinders clean from corrosion.

SETTING PAPER CYLINDER PRESSURES. Charles F. Geese. National Lithographer 65, No. 3, March 1958, pp. 48, 52 (2 pages). Detailed instructions are given for the alignment and setting of the impression cylinder for proper printing pressure.

*METHOD FOR PLANOGRAPHIC PRINTING. U. S. Patent 2,821,133 - Application December 15, 1954. George Rogers Brodie - Assigned to Fred'k H. Levey Co., Inc. Official Gazette 726, No. 4, January 28, 1958, p. 682. In the process of offset printing wherein an ink containing a volatile organic solvent is applied to the surface of a printing plate, which has previously been wet with water, by rolling contact with the surface of a form roller to which a film of the ink is supplied over a train of cooperating ink-distributing rollers the step of preventing the accumulation of water in the ink film being conveyed to the printing plate by circulating in contact with a portion of said ink film a substantially dehydrated atmosphere comprising a substantial proportion of vapors of the ink solvent while shielding said portion of the ink film from press room atmosphere.

*METHOD AND APPARATUS FOR CONTROLLING WATER SUPPLY IN PLANOGRAPHIC PRINTING PRESS. U. S. Patent 2,821,132 - Application December 13, 1954. G. R. Brodie - Assigned to Fred'k H. Levey Co., Inc. Official Gazette, Vol. 726, No. 4, January 28, 1958, pp. 681-2, 2 pages. 1. In conjunction with a multi-color, web-fed printing press comprising a plurality of plate cylinders, adapted to hold planographic printing plates in position during printing, and means for separately applying water to the plates on the respective plate cylinders by which the rate at which water is applied to the respective plates may be varied by varying the speed of operation of the water-supplying means associated therewith, a plurality of fluid motors each mechanically connected to drive one of the water-supplying means, a fluid pump, a conduit leading from the pump, a shut-off valve positioned in said conduit, connections leading from the conduit beyond said valve to each of the motors, a flow control valve positioned in each of said connections, a second conduit leading from the pump, a shut-off valve positioned in said conduit,

connections leading from the second conduit at a point beyond the valve to each of the motors, and a flow control valve positioned in each of the last said connections.

3. In the process of multi-color printing from a plurality of planographic printing plates to which water is applied prior to the application of ink thereto at rates dependent on the speed of operation of the water-supplying means, the method of regulating the rate at which water is applied to the respective plates during the starting-up period and during normal operation of the press, which comprises providing alternate paths by which motivating energy is supplied to the water-supplying means, separately adjusting the rate at which water is to be supplied to the respective plates during the starting period of the press by adjusting the amount of energy supplied to the respective water-supplying means over one of said paths, separately adjusting the rate at which water is to be supplied to the respective plates during normal operation of the press, without disturbing the first adjustments, by adjusting the amount of motivating energy supplied to the respective water-supplying means over the second of said paths, passing the motivating energy to the respective water-supplying means over the first said path when starting the press and switching the motivating energy to the second said path when normal operating conditions have been attained.

GRAPHIC ARTS - GENERAL

RELIEF PRINTING PLATES FROM PHOTOSENSITIVE NYLON. Robert M. Leekley, R. L. Sorensen, D. J. Byers, J. V. Casanova and K. B. Latimer. 9th Annual TAGA Proceedings, Part A, May 13-15, 1957, pp. 1-6 (6 pages). Press plates have been prepared from a new photosensitive nylon composition by exposure to ultraviolet radiation and development with solvent to remove the portions of the composition which have not been insolubilized. These plates are now being field tested on production equipment.

COMBINATION PLATE ETCHING WITH THE DOW ETCH PROCESS. John A. Easley. 9th Annual TAGA Proceedings, Part A, May 1957, pp. 7-14 (8 pages). Since the introduction of the original Dow Etch Process for etching magnesium photo-engraving sheet more than three years ago, combination plate etching has been a goal toward which considerable research has been directed by Dow, The ANPA Research Institute, Inc. and others. Several procedures have been proposed, tested, and used commercially. Some gave excellent results, but consistency was a problem which was solved only in a few commercial installations. Recently, a new bath was developed which etches coarse screen combination plates. Since the new method uses substantially the same chemicals, but in different proportions, and the same etching machines as the original Dow Etch Line and Halftone Processes, the combination process has gained wide acceptance in a short time.

PROGRESS/VALUE OF SCIENTIFIC RESEARCH. Share Your Knowledge Review 39, No. 5, February 1958, pp. 13-18 (6 pages). A summary of world research programs showing who is doing what in Graphic Arts Research. Subject material includes: Present Day Developments; Growth of Research Organizations; Fundamental Research; Limitations on Research; Programed Research; Reduction to Practice; Future Developments in the Industry; Limitations of Activities by Finance; Research in United States, Britain, Holland, Germany and Sweden.

WRAP-AROUND RELIEF PLATES FOR OFFSET AND DIRECT PRESSES. E. A. Kilheffer. The American Pressman 68, No. 1, January 1958, pp. 6,7,8,9,10,12 (6 pages). An extensive article describing the application of relief plates to offset (dry-offset) and direct printing presses. Included are case histories on small and large presses. Production runs up to 11,000,000 impressions are mentioned as well as plate characteristics and requirements.

WHICH IS BETTER NO-OFFSET MIX: LIQUID OR POWDER? James A. West. Inland Printer 140, No. 4, January 1958, pp. 50,53 (2 pages). Both sprays have advantages as well as disadvantages. Included are analyses of both and hints for using them in the plant.

*PHOTOCONDUCTIVE MATERIAL. U. S. Patent 2,822,300 - Application March 29, 1954. Edward F. Mayer and Lloyd Owens - Assigned to Horizons Inc. Official Gazette, Vol. 727, No. 1, February 4, 1958, page 156. 3. The method of increasing the spectral response, light sensitivity and photoconductive stability of elemental selenium which comprises: admixing therewith an amount of arsenic in an amount between about 1% by weight and an amount not exceeding equiatomic proportions, heating the resulting mixture in a closed vessel to a temperature greater than 750°F., and maintaining the mixture at the temperature for a period of time sufficient to dissolve all of the arsenic in the selenium, to distribute the arsenic uniformly throughout the selenium and thereafter converting the product into a uniform film less than about a few mils thick but retaining the homogeneity of the solution, by evaporating the material under a vacuum and depositing it on a relatively cool substrate.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - MAY 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

PURIFICATION AND CHEMICAL SENSITIZATION OF PHOTOGRAPHIC GELATIN. Walter D. Kelly, Jr. The Journal of Photographic Science, 6, No. 1, Jan.-Feb. 1958, pp. 16-22 (7 pages). A photographic method for the evaluation of methods of producing inert gelatins is described. Of the several methods studied, treatment with peroxyacetic acid was most effective. A gelatin treated in this way was partially restored to its original photographic characteristics by the addition of both sodium thiosulphate and sodium sulphite.

*FILM PROCESSING APPARATUS. U. S. Patent 2,829,575 - Application March 23, 1956. William V. Collins. Official Gazette 729, No. 2, April 8, 1958, p. 296. In apparatus for processing photographic film, a container having an open upper end and a lower end, a light-tight liquid pervious lower screen closing the lower end of the container, a film rack comprising a cover resting sealingly upon and closing the upper end of the container, a light-tight liquid pervious upper screen secured to and depending from the cover into the container, a vertical sleeve secured to and depending from said upper screen, said sleeve having sidewalls and endwalls, vertical plates having upper portions and lower portions, said upper portions being secured to related sidewalls of the sleeve, with said lower portions depending below said sleeve, a pair of opposed vertical facing channels positioned between said vertical plates, said channels having webs and side flanges, means securing said side flanges to said vertical plates for adjustment of the channels toward and away from each other, vertical film separator bars fixed in and projecting laterally inwardly from said webs, said separator bars being laterally spaced from each other, a lower film supporting cross bar mounted across the container, on a level below said vertical plates and said channels, and an upper cross bar, said vertical plates having upper portions provided with vertically

elongated slots through which said upper cross bar extends for vertical adjustment relative to the lower cross bar.

LETTERPRESS COPY FOR LITHO REPRODUCTION. The Litho-Printer, Vol. 1, No. 1, January 1958, page 22, 1 page. From time to time a set of original photoengravings or duplicate color plates prepared for letterpress have to be used as copy in lithographic printing. The conversion consists usually of making reversed line exposures in the camera from the halftone plates. To do this, the blocks are either chalked up and the surface burnished, or they are sprayed black and the printing surface then inked with a short white ink. The set of photographic colour printers so prepared can be used direct for lithographic reproduction.

PLANOGRAPHIC PRINTING PROCESSES

LITHO PLATES BY XEROGRAPHY. Anon. Battelle Technical Review 7, No. 3, March 1958, pp. 13-14. A rapidly prepared, dry process lithographic plate directly from a xerographic plate results by the use of a method recently described by technologists at Battelle. In the process, xerographic images are fixed on special metal or paper plates. These plates are stated to produce good quality lithographic printing and press runs of up to 25,000 impressions with essentially no deterioration of image quality. Other advantages are mentioned. Research is continuing with emphasis on devising techniques for halftoning images directly on the plates in a process camera.

*LITHOGRAPHIC PRINTING. U. S. Patent 2,830,536 - Application December 15, 1955. William H. Wood and Dolor N. Adams - Assigned to Harris-Intertype Corp. Official Gazette 729, No. 3, April 15, 1958, p. 550. In a method of preparing a lithographic plate for printing, the step which consists in applying to the printing surface of such plate a solution consisting essentially of water and a relatively small percent of an agent from the class consisting of water-soluble per-halogenated aliphatic saturated fatty acids and their water-soluble salts and having an acid pH.

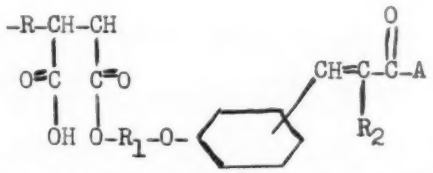
*LITHOGRAPHIC PRINTING PLATES. U. S. Patent 2,806,424. September 17, 1957. Anthony L. Ensink. Chemical Abstracts, Vol. 52, No. 1, January 10, 1958, column 144. Na or NH_4 alginates (2.5-3% aqueous solutions) are used with or without fillers to coat waterproofed papers for use as direct-image printing plates. The alginates are rendered insoluble by addition of metal salts. Dichromates are incorporated into the alginate solutions to form light-sensitive plates and Ag salts to give photosensitive plates.

*LITHOGRAPHIC PRINTING PLATES. U. S. Patent 2,804,388. August 27, 1957. James L. Diedrich and Thomas U. Marron (to A. B. Dick Co.). Chemical Abstracts, Vol. 52, No. 1, January 10, 1958, column 144. A direct positive lithographic plate with a hydrophilic base is coated with a layer which releases HF upon ultraviolet exposure; the HF reacts with a hydrophobic organosilicon film to form an ink-receptive image. In a typical example, a scratch-brushed aluminum sheet was heated with hot aqueous 10% Na silicate and NaOH, rinsed, and flow-coated or sprayed with a 5% solution containing equimolecular amounts of p-diazo-N,N-diethylaniline-$ZnCl_2$ and NH_4BF_4 in a 15% acetone solution in water. After air drying, the plate was coated with 0.4% diethyldichlorosilane in benzene, again air dried, and exposed to ultraviolet light through a transparent positive. After development in H_3PO_4 solution and coating with transfer ink or lacquer, the plate was ready for lithographic printing.

*STEP AND REPEAT MECHANISM FOR PHOTOCOPYING MACHINES. U. S. Patent 2,827,840. Application April 22, 1955. Serial No. 503,150. Claims priority, application Great Britain April 27, 1954. 6 Claims (Cl.95-73). William Henry Kemp, Leeds, England, assignor to George Mann and Co. Ltd., Leeds, England, a British company. Official Gazette, Vol. 728, No. 4, March 25, 1958, page 749. 1. A step-by-step-mechanism for photo-copying machines having a fixed carrier member to which a transparency is secured and a movable support carrying a photo-sensitive material; mechanical means for moving said movable support adjacent said carrier member to

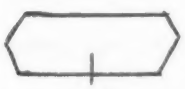
exert contact pressure between said transparency and said photo-sensitive material comprising a main operating shaft, a pinion secured to said shaft, a first movable member having a rack engaging said pinion, a second movable member connected to said movable support to lift the same toward said fixed carrier, spring means between said first and second movable members so that when movement of said movable support is arrested by contact between adjacent surfaces of said movable support and said fixed carrier the degree of pressure exerted on said surfaces depends on the compression of said spring means, a first disc keyed to said shaft and carrying an operating lever, a second disc rotatable about the axis of said shaft and connected for movement with said second movable member, a third disc also rotatable about the axis of said shaft, means for selectively locking said third disc within a predetermined angular range of movement, and means carried by said first disc cooperating with the locking means on said third disc whereby angular movement of the operating lever is limited by the setting of said third disc to apply a predetermined pressure.

*LIGHT-SENSITIVE, UNSATURATED, POLYMERIC MALEIC AND ACRYLIC DERIVATIVES. U. S. Patent 2,824,084. Application May 26, 1955, Serial No. 511,417. Cornelius C. Unruh and Donald A. Smith, Rochester, N. Y., Assignors to Eastman Kodak Company, Rochester, N. Y., a corporation of New Jersey. Official Gazette, Vol. 727, No. 3, February 18, 1958, page 632. 1. A resinous polymer consisting of from about 20% to substantially 100% by weight of the recurring structural unit:

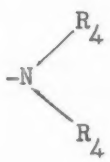


wherein R represents a member selected from the group consisting of a styrene unit, a vinyl ester unit, an isopropenyl ester unit, an alkyl acrylate unit, an alkyl methacrylate unit, a vinyl alkyl ether unit and an ethylene unit and wherein in each instance the alkyl group contains from 1 to 4 carbon atoms, R_1 represents an

alkylene group containing from 2 to 3 carbon atoms, R_2 represents a member selected from the group consisting of an atom of hydrogen, an alkyl group containing from 1 to 4 carbon atoms, a nitro group, a cyano group, and a $-COOR_4$ group, and A represents a monovalent group selected from the group consisting of an -OH group, a $-R_4$ group, an $-OR_4$ group, a $-COOR_4$ group, a $-CH=CH-C_6H_4-OR_4$ group, a $-C_6H_4-C_6H_5$ group and the group

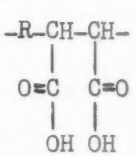


wherein m is a whole number of from 1 to 2 and X represents a member selected from the group consisting of a hydrogen atom, a halogen atom, a nitro group, a cyano group, an $-R_4$ group, an $-OR_4$ group, a -COOH group, a $-COOR_4$ group, a $-CONH_2$ group and an



group

and wherein R_4 in each instance represents an alkyl group containing from 1 to 4 carbon atoms, the remainder of the molecule to make a total of 100% being composed of the recurring structural unit:



wherein R has the above definition.

FRANGOS DEVELOPS "METALITH". Anonymous. Modern Lithography, Vol. 26, No. 2, February 1958, page 108. A one-chemical treatment for a pre-sensitized plate called "Metalith" developed by William A. Frangos, Inc., was demonstrated for Modern Lithography. After an exposure of one to five minutes, a small amount (1/4 oz. for a 17" x 2" plate) of "Metalith" is distributed over the entire plate with up and down and sideways motions. The image appears immediately and no further

development is required. After the plate has been put on the press, it is sponged with clean water before printing. Mr. Frangos claims that this treatment will make pre-sensitized plates perform more consistently, will eliminate scumming, increase the length of run, lower costs to the lithographer, and will give printing quality "equal to deep-etch".

WHAT'S NEW IN EQUIPMENT AND IDEAS? The Litho-Printer, Vol. 1, No. 1, January 1958, page 29, 1 page. A new semi-automatic flatbed offset press* is equipped with two beds and permits printing of various thicknesses of paper, board, tin, glass, plywood and plastics. Printing plates are cooled and the cylinder is heated, as are the inking rollers. Sheets are laterally fed into the machine and delivered by two tables of adjustable height.

* (not illustrated)

PAPER AND INK

INKS - OF TODAY AND TOMORROW. Dr. Maurice Adler, California Ink Co. The National Lithographer, Vol. 64, No. 5, May 1957, pp. 80-1, 2 pages. The second part of a two part article discusses what improvements are desirable for future printing inks. Desired are improved litho gold inks, improved daylight fluorescent inks, and three color process inks approaching the pure theoretical colors of the spectrum. Also described is a new printing process called the "Complete Transfer Method" in which ink is distributed on a hot printing plate where it dries. Then the dry ink is then transferred completely to the paper. Such printing is already being done in the laboratory.

HUMIDITY STEP-FUNCTION GENERATOR. National Bureau of Standards Technical News Bulletin, Vol. 40, no. 7, July 1956, page 94. A simple apparatus for producing sudden changes in RH at room temperature is described. This is used for studies of response time of hygrometers, of as low an order as 0.06 seconds. Accuracy is of the order of two per cent.

See: Rev. Sci. Inst. 26, page 1196 (1955) also
N.B.S. J. Res. 53, 19 (1954) R.P. 2512
N.B.S. J. Res. 55, 71 (1955) R.P. 2606.

METAL DRIER CATALYSIS. C. T. Morley-Smith. Journal of the Oil and Colour Chemists' Association, Vol. 40, No. 12, December 1957, pp. 1035-1050, 16 pages. A review of the mechanisms of drier actions in which the terms surface drier, through drier, active and auxiliary driers, participating and promoter driers, are discussed. Variations in commercial driers which influence their quality follow the nature of the anion, valency of the metal, the acidity or alkalinity of soap formed, and the method of preparation as it may affect the final product. Data showing the effect of each of these on drying time is given. The greatest differences appear for cobalt soaps, although the results are not considered comprehensive enough to permit statistical analysis. New developments in driers are given, including the use of barium, calcium, zirconium, and vanadium. Barium naphthenate is considered a promising substitute for lead as a promoter drier.

*SIZED PAPER AND METHOD OF MAKING. U. S. Patent 2,830,916 - Application September 8, 1954. Frank A. Brown - Assigned to National Dairy Products Corp. Official Gazette 729, No. 3, April 15, 1958, p. 649. A sized paper sheet having a non-adhesive surface, said sheet comprising a paper sheet having incorporated therewith starch and a material selected from the group consisting of carragheen and carragheenin, the ratio of the amount of said material to the amount of said starch being in excess of about .01:1, said starch being present in an amount of between 3 pounds and 18 pounds per ream of 3,000 square feet of said paper sheet.

*METHOD AND APPARATUS FOR MEASURING THE SURFACE SMOOTHNESS OF GLOSSY OBJECTS. U. S. Patent 2,830,490 - Application September 16, 1955. Mary S. Pellegrini. Official Gazette 729, No. 3, April 15, 1958, p. 536. A device for measuring the gloss of a plane or curved surface by positioning said device on said surface and alternately reflecting standard mesh screens by said surface in said device until a visually distinct image is obtained which determines the gloss rating of said test surface, comprising a substantially light-proof box having a top, side and parallel walls, and an open bottom, a cushioning means secured to the edge defining

said open bottom, adapted for contour and light sealing engagement of said box with said test surface whereby a light-proof chamber is defined in said box when said open bottom is positioned in sealing engagement with said test surface, said top and side walls being arranged to form an extension and a lower level top portion on said box, said extension being provided with an aperture therein, a flashlight having a diffuser for projecting light into said chamber mounted in said aperture, mesh screen supporting means on the interior surface of said parallel walls for supporting a mesh screen in said chamber between said flashlight and said open bottom, and a mesh screen mounted on said support means having a mesh capable of being reflected as a visually distinct image by said test surface, said low level top portion being provided with a slot for visual observation of said image and said gloss being determined by the rating of said screen producing said distinct image.

*METHOD OF COATING AND SMOOTHING PAPER. U. S. Patent 2,829,980 - Application December 21, 1953. John C. Redd - Assigned to The Mead Corporation. Official Gazette 729, No. 2, April 8, 1958, pp. 399-400. In the coating of paper to produce surface characteristics adapted for receiving printing and the like, the method of forming a smooth surface on a layer of fluent coating composition applied to paper which comprises the steps of smoothing the surface of said applied coating with a smoothing member maintained at a low temperature for immobilizing said coating against adhesion to said member to provide substantially complete release of said smoothed coating from said member, applying to the surface of said smoothing member a film of a water soluble release fluid prior to contact between said surface of said smoothing member and said coating for inhibiting wetting of said surface by said coating and adhesion thereto, said release fluid being adapted to wet the surface of said smoothing member and having a freezing point substantially lower than said low temperature, thereafter separating said paper and applied coating from said member, and drying said coating on said paper.

MICROSECTIONAL STUDIES OF COATED BOOK PAPER. R. L. Gaiser. TAPPI 41, No. 1, January 1958, pp. 133A, 134A, 135A, 136A (4 pages). This article briefly describes the preparation of samples, the use of a microtome, and staining procedures for studying the cross-section of paper. A number of photographs of the slides obtained shows how surface contour, depth of coating, thickness, penetration and fiber distribution can be studied.

COLOR VARIATION IN PAPERBOARD. J. T. Patterson, S. L. Goldheim, and W. M. Hancock. TAPPI 41, No. 1, January 1958, pp. 20,21,22,23 (4 pages). The Lord Baltimore Press undertook a project to determine (1) the extent of color variation in white coated paperboard, and (2) whether instrumentation and control chart procedure could be devised to help the mills control the variation encountered. By taking two-filter readings with a Colormaster differential colorimeter, a control chart system has been devised to specify and control the color variation of paperboard. The necessary data are taken directly from the Colormaster readings without resorting to extensive calculations or absolute values. The extent and direction of color variation is readily apparent from the control chart. This system has been worked out in conjunction with board mills and the results look very promising.

LITHOGRAPHY - GENERAL

*DRY OFFSET PRINTING. J. S. Mertle. Photo-Litho Notes. The National Lithographer 65, No. 2, February 1958, p. 42. According to A. D. Mackenzie, the principle of this operation can be traced to 1819. In that year two British printers, Augustus Applegarth and Edward Cowper, attempted to produce multicolor banknotes for the Bank of England on a machine designed to simultaneously print by letterpress on both sides of a sheet of paper by the transfer (offset) principle. The aim was to have the impressions on the face and back of the notes in such precise register that only one image could be seen when the note was viewed by transmitted light, the accurate registration intended to discourage the counterfeiting then

rampant in England.

SUCCESSFUL TWO DAY LTF LITHO FORUM, FEATURING MOVIES AND DEMONSTRATIONS, DRAWS ALMOST 1,000. Anonymous. New England Printer and Lithographer, Vol. 21, No. 1, February 1958, page 90. A news article describing the movie forum in Boston, January 17 and 18. Essential facts taken from LTF Press Book material. Bulk of article is name publicity for sponsors, contributors, etc.

PLATE TROUBLES - WHO'S TO BLAME. Oscar Diehl. The National Lithographer, Vol. 64, No. 5, May 1957, page 16. The three main causes of plate trouble at the press are excess pressure, faulty fountain solution, and improper ink mixture. When the halftones on a conventional albumin plate begin to thicken, look sandy, get weak or take on a washed out look, the three variables that must be checked are pressure, acid and ink. If the pressure is correct, the print will show signs of breaking up if 0.0015" were removed from the blanket packing. If the 70 or 80 per cent screens are fogging or closing up, it may be necessary to lower the pH. If the dots are sharpening it may be necessary to raise the pH.

GRAPHIC ARTS - GENERAL

BICHROMATE IN PHOTOGELATIN. Dr. Carl S. Miller. Graphic Arts Monthly 30, No. 1, January 1958, pp. 134, 136 (2 pages). Photogelatin, known as Collotype, is the only printing process which prints in continuous tone. The change in the oil-water acceptance of the bichromate-gelatin surface on exposure to actinic light is the principle upon which the process depends. After a photogelatin coating has been exposed to a continuous tone negative, it is thoroughly washed in cold water to remove every trace of the unused bichromate and then soaked in a glycerine-water mixture. The glycerine-water mixture is absorbed by the gelatin surface in accordance with the exposed image on it. Where light has hardened the surface it repels the glycerine-water mixture and accepts ink. The less the exposure of the surface the less ink-receptive it is and the more water receptive it is. On the press the plate is inked in the regular manner but requires no

fountain solution. The water balance is maintained by controlling the humidity in the pressroom and by washing the plate with a glycerine-water mixture every 3500 impressions. Runs of 25,000 impressions at speeds up to 5000 per hour are currently obtainable.

PUBLISHING COMPANY DESIGNS BINDERY DETECTOR * EJECTOR. American Printer and Lithographer, Vol. 139, No. 2, February 1958, pp. 35-37, 3 pages. Engineers at Meredith Publishing Company in Des Moines have designed and produced what is said to be a revolutionary "detector-ejector" for the company's book and magazine bindery. The detector-ejector, now on the last lap of its experimental stage, works electronically, and is predicted to produce great savings in time and labor. It is the first such mechanism to operate with a side-stitching bindery operation.

BUILDING PROGRESS IN THE GRAPHIC ARTS INDUSTRY. Printing Equipment Engineer, Vol. 88, No. 6, March 1958, pp. 49-72, 24 pages. A 24 page section showing new and modernized plants. Included are some answers to questions on the following:

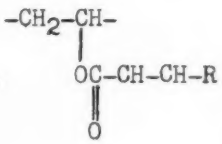
Arranging equipment
Workflow Routes
Department Locations
Expanding the Plant
How to Plant
Lighting, Flooring
Air Conditioning
Building Materials
Modernization
Building Sizes
New Equipment
Materials Handling

ELECTRODYNAMIC IMAGE RECORDING. U. S. Patent 2,764,693. 250/65 5/25/51 - 9/25/56. J. E. Jacobs and R. Frerichs to General Electric Company. Ansco Abstracts, Vol. 17, No. 2, February 1957, page 67. The process makes use of light-sensitive semiconductors having current amplifying characteristics, i.e. which become conductive on exposure to light or other radiation by the release of hundreds of thousands of electrons, like an electronic amplifier, due to ionization of electron donor centers in the crystal, whereas other semiconductors such as selenium do not show this amplification. Suitable are CdS, CdSe, and HgS. They are used as a thin uniform layer of finely divided crystals, mutually insulated from each other, between a surface sheet of conductive material transparent to visible light, e.g.

stannous chloride, and the recording sheet which is held in close contact with the semiconductor by another conductive sheet, connected to the other pole of a current source. The recording sheet may be paper treated with sodium chloride and phenolphthalein, which will turn reddish, or with potassium iodide-starch, which becomes black with the flow of electrical current. - 13 apparatus claims

*XEROGRAPHIC REPRODUCTIONS. U. S. Patent 2,808,328. October 1, 1957. Carlyle W. Jacobs. Chemical Abstracts, Vol. 52, No. 1, January 10, 1958, column 144. A device for deposition of pigment particles on the electrostatic image, with liquid spray development possible, is illustrated and described.

*PHOTOMAGNETIC COMPOSITION AND PRINTING PROCESS. U. S. Patent 2,823,999 - Application January 7, 1955. Franklin A. Hamm - Assigned to Eastman Kodak Company. Official Gazette 727, No. 3, February 18, 1958, p. 616. A photomechanical resist composition comprising a polymeric material of esters of polyvinyl alcohol containing at least 60 molecular percent of recurring structural units having the formula:



wherein R represents a monocyclic aryl group of the benzene series as a combined carrier and light-sensitive material, and a ferromagnetic iron oxide.

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LITHOGRAPHIC ABSTRACTS

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JUL 2 1958

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LITHOGRAPHIC ABSTRACTS - JUNE 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

THE LINOFILM PHOTOTYPESETTING SYSTEM. Louis Rossetto. The Penrose Annual 51, 1957, pp. 94-101, 4 pages illustrations (12 pages). The Linofilm phototypesetting machine consists of two separate and independent units: the keyboard unit and the photographic unit. Composition is done at the keyboard unit by an operator who uses the electric typewriter keyboard and the auxiliary controls of this unit. The output of the keyboard unit is a typewritten proof copy and a perforated tape. The tape is then fed at any convenient time thereafter to the photographic unit. This unit reads the tape and builds the copy by successive sequential photographic projection of characters in the line to produce on film a right-reading positive of the line exactly as it was composed at the keyboard unit. The operation of the photographic unit is completely automatic, requiring no further attention after tape and film have been loaded into the unit.

MODERN ARC-LAMPS FOR THE PRINTING INDUSTRY. E. Rouse. The Penrose Annual 51, 1957, pp. 150, 151, 152, 2 pages illustrations (5 pages). The article describes the mechanical and electrical features of American and European arc-lamps. In America, arc-lamps are fed from a single-phase supply, but in Europe they are generally of the three-phase type and therefore have three carbons. The arc-lamps illustrated include:

1. The Macbeth Constantarc.
2. The Hunter-Penrose motorized carbon arc lamp.
3. The 3200 Grafarc lamp, 95 ampere model, with transformer and rheostat.
4. The Petroli three-phase arc lamp, with stand, transformer and rheostat.
5. The Staub Ticomat with Unilight Compensating Device and control panel.

*PHOTOGRAPHIC REPRODUCTION PROCESS. U. S. Patent 2,747,999, May 29, 1956. Henry C. Yutzy and Burt H. Carroll (to Eastman Kodak Co.). Chemical Abstracts, Vol. 51, No. 3, February 10, 1957, columns 1756, 1757. A diazo process is described which is suitable for production of multiple copies from a single exposed photographic element. The process includes exposing a layer of a diffusible diazonium salt to a suitable subject, such as a line halftone or continuous-tone positive, for a time sufficient to decompose the diazonium salt in the exposed region, followed by pressing the exposed layer into intimate contact with a moist receiving sheet to transfer a portion of the un-decomposed diazonium to the receiving sheet. The elements are then separated and, in the presence of alkali and a coupling component, an azo dye image is formed on the receiving sheet. The number of subsequent prints is dependent upon the amount of diazonium salt in the exposed element. The process is adaptable to reflex copying methods.

*LIGHT-SENSITIVE COMPOSITION. U. S. Patent 2,754,210, July 16, 1953. S. B. Elliott, assigned to Ferro Corporation. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 392. A light-sensitive composition comprises an intimate mixture of (1) a hydroxyl- and amino-free, unsaturated cyclic 1,4-diketone or its alkyl- or halogen-substituted derivative, e.g., tetrachloro-1,4-benzoquinone; (2) a polymeric alkenyl chloride having at least ten carbon atoms with at least one chloride on every other carbon atom, e.g., polyvinyl chloride; (3) a metal oxide or metal salt of a carboxylic acid or a weak inorganic acid, the metal being aluminum, iron, antimony, zinc, tin, titanium, zirconium, beryllium, cadmium, or bismuth. A pigment, e.g., talc, silica, titanium dioxide; halogen-free polymeric materials, e.g., polyvinyl alcohol; and a plasticizer, e.g., dioctyl phthalate, may be used. On exposure to actinic light, the polymeric alkenyl chloride liberates chlorine, which reacts with the metal compound to form a Friedel-Crafts catalyst. On subsequent development by heat, this

catalyst induces chemical reaction and a color change in the exposed areas. The process for making photographic images from such a composition is also claimed.

*PHOTOGRAPHIC PROCESS USING LIGHT-SENSITIVE RESINS. U. S. Patent 2,772,158, February 18, 1953. S. B. Elliott, assigned to Ferro Corporation. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 392. A photothermographic process uses a film having a photosensitive layer comprising an intimate mixture of (1) a halogenated vinyl resin whose molecular weight is at least 6000, e.g., polyvinyl chloride; (2) 0.1 to 25 percent, by weight, of the resin, of zinc or cadmium oxide, or of the aluminum, zinc, tin, titanium, zirconium, beryllium, cadmium, bismuth, iron, or antimony salt of a halogen-free inorganic acid or carboxylic acid; and (3) optionally, a plasticizer, such as dioctyl phthalate. On image exposure with actinic light, the resin liberates chlorine, which reacts with the metal compound to form a Friedel-Crafts catalyst. The exposed material is developed by heating to a temperature of 200° to 300°F. for 1 to 60 minutes, during which time the catalyst promotes a chemical reaction producing a color change in the exposed areas.

PHOTOGRAPHY OF COPY WITH VERY FINE DETAIL. Arthur Gladu. Le Maitre Imprimeur, October 1957 (in French), pp. 5-6, 2 pages and 2 illustrations. This is No. 18 in a series for the process photographer. The use of large lens stops rather than small stops is discussed and a picture comparison shown. LTF Research Progress #39 is referred to. Effect of still development in improving fine detail of halftones is illustrated with comparison of a photo reproduction. Also a picture comparison of rescreening halftone copy without pattern by the Variomat principle.

*ALUMINUM PHOTOGRAPHIC PLATES. U. S. Patent 2,766,119, October 9, 1956. Meyer L. Freedman and Martin A. Levitin (to Horizons Inc.). Chemical Abstracts, Vol. 51, No. 2, January 25, 1957, column 922. Al and Al-alloy photographic plates with good stability on storage before use are obtained by impregnation of their anodized surfaces with an aqueous solution of a Ag salt containing 0.1-2% of an

organic hydrocolloid, and then treating the plates with an aqueous solution of an alkali metal halide to form a Ag halide. The anodized Al is first treated with a solution of a strong oxidizing agent. For example, anodized Al was dipped for a few seconds in a 5% CrO_3 solution at 60°, washed dried, soaked in a solution of $AgNO_3$ 30, gelatin 0.5, and $K_2Cr_2O_7$ 0.02 g. in 100 ml. water, drained, dried and then soaked for 1 minute in a solution of KBr 5 and $K_2Cr_2O_7$ 5 g. in 100 ml. water. The plate was washed and then dried in an oven at 50°.

THE EVOLUTION OF OPTICAL GLASS. H. J. Vogt. Offset Duplicator Review 7, No. 12, December 1957, pp. 34, 36, 40, 69, 71 (5 pages). A review of the history of glassmaking up to the presently available improved optical glasses. Part II of this series will sketch the evolution of the modern graphic arts lenses.

INFRA-RED RECORDING TODAY. C. E. Engel. British Journal of Photography 105, February 7, 1958, pp. 68-71, 73; Ansco Abstracts 18, No. 3, March 1958, p. 88. Herschel in 1840 already, using paper coated with lampblack and alcohol, employed the principle of the illustrated Baird-Atomic Evaporograph where the membrane is a 4 μ in thick nitrocellulose film coated on one side with gold. The quenching of the luminescence of short wave-excited phosphors by infrared, discovered by Becquerel in 1842 is employed in the Vertoscope of Meteor Apparatebau to view negatives as positives. Insufficient resolution and definition limit the usefulness of conversion of infrared to visible light by cathode ray tube. The infrared films of various manufacturers with sensitivity range, speed and other data are listed in a table. Electronic flash has proven a more convenient infrared source than photoflood bulbs.

PLANOGRAPHIC PRINTING PROCESSES

*ELECTROLESS CHROMIUM PLATING. U. S. Patent 2,829,059 - Application January 26, 1956. Phillip H. Eisenberg and Douglas O. Raleigh - Assigned to Sylvania Electric Products Inc. Official Gazette 729, No. 1, April 1, 1958, p. 154.

An electroless chromium plating solution composed of the following in aqueous solution: a hypophosphite salt having a concentration of about 10 grams per liter; a buffering agent; at least one chromic salt having a concentration of about 17 grams per liter; and a chromium deposition rate controlling agent soluble in the solution and characterized by the ability to reduce chromic ions to chromous ions and to form a readily reducible complex with said chromous ions, said agent being selected from the group consisting of oxalic acid and its alkali salts, said agent having a concentration falling within the approximate range 4.5-9.0 grams per liter.

*VACUUM FRAME APPARATUS. U. S. Patent 2,826,976 - Application July 22, 1954. Herbert Gelb - Assigned to Joseph Gelb Co. Official Gazette 728, No. 3, March 18, 1958, pp. 521. Contact printing apparatus comprising a main frame; a vacuum printing frame pivotally mounted on said main frame, said printing frame having a sealing light-transmitting cover, and a resilient blanket for forming a hermetically sealed envelope with said cover when the latter is in closed position; means for evacuating said envelope; a cock for setting said envelope into and out of communication with the atmosphere; and means for locking said cover in closed position, said lastnamed means effecting operation of said first named means and closing of said cock when in locking position, and stopping operation of first-named means and effecting opening of said cock when in nonlocking position, wherein said printing frame is automatically and releasably locked in position when disposed horizontally.

*IMPROVEMENTS IN PHOTOGRAPHIC PROCESSES FOR LITHOGRAPHIC PRINTING. British Patent 743,278, Application date June 17, 1953, Published January 11, 1956. Kodak Ltd. Kodak House, Kingsway, London, W. C. 2. The British Journal of Photography, Vol. 104, No. 5086, November 8, 1957, p. 648. When using light-sensitive layers for preparing lithographic plates, which consist of a colloid together with a water soluble aryl azide, it is found that the light hardened portions which form the image areas are insufficiently grease accepting for

lithographic purposes. In the present invention it is proposed to prepare stencil images from colloid layers in a solution of a compound that will harden and improve the hydrophobic characteristic of the stencil. The solutions to be used in the invention are those containing a salt having a polyvalent metal cation or anion or alternatively an organic hardener. Examples are potassium permanganate, ammonium dichromate, chromic acid, zirconium sulphate, and formalin, etc. In one particular application of the invention it is proposed to treat the developed colloid stencil layer with a solution of ammonium dichromate and hydrofluoric or hydrofluosilicic acid to which a small quantity of gum arabic has been added. This treatment hardens the colloid stencil and at the same time produces a hydrophilic surface on the metal support thereby providing an excellent lithographic printing plate.

LITHO PLATES. J. S. Mertle. Photo-Litho Notes. National Lithographer 65, No. 2, February 1958, p. 44. Treatment of grained zinc and aluminum plates with a 5% alkaline silicate solution was patented in Britain by the Addressograph-Multigraph Corporation. The treatment is said to promote easier development of exposed photolitho images and reduce scumming tendency.

*PHOTOMECHANICAL ETCHED METAL PLATES. British Patent 745,708. Application - Netherlands, November 29, 1952. Published February 29, 1956. Same as Dutch Patent 83,160. Philips Electrical Industries Ltd.of Spencer House, South Place, Finsbury, London, E. C. 2. The British Journal of Photography, Vol. 104, No. 5086, November 8, 1957, p. 648. Photomechanical resists and stencils are proposed in which a layer of a polyvinylbutyral resin together with an alkali metal or ammonium chromate or bichromate is applied to a metal plate. It is claimed that superior adhesion is obtained with this resin as well as good resistance to chemical treatments and acid etching. In order to achieve good ink acceptance when using the resist for lithographic purposes it is proposed to add small quantities of shellac or colophony to the polyvinylbutyral coating. The coating

is prepared by dissolving the resin in alcohol and mixing with this a small quantity of an aqueous solution of ammonium bichromate. After exposure the unexposed areas are removed by bathing the layer in alcohol and the resist is obtained which will satisfactorily withstand an etching treatment in for instance a 40 percent ferric chloride solution.

*PRINTING FORMS AND PLANOGRAPH PRINTED MATTER BY A DIRECT SELECTIVE TRANSFER PROCESS. - Dutch Patent 82,809, September 15, 1956. Chemische Fabriek L. van der Grinten. Chemical Abstracts, Vol. 52, No. 2, January 25, 1958, column 944. The process of Dutch 80,290 (Chemical Abstracts 50, 16494i) is modified, in that the screen patterned image is transferred to a sheet of lithographic Al, Zn, steel or stone, a bimetal plate, a deacetylated cellulose ester, or paper of great wet-strength, and the receiving sheet is developed to a planographic printing form. This is accomplished by treating the plate after transfer with a solution of H_3PO_4 and gum arabic, by chemically or electrically etching the non-image parts, or by coating the latter with a layer of a different metal. The transferred image must be hardened so that the resistance to printing process is enhanced, e.g. an image consisting of thermosetting resin is heated to 130-50°, an image of gelatin is tanned by HCHO vapor, or an image containing a diazo compound and an azo component is exposed to NH_3 vapor, etc. In the screen-forming materials, pigments such as graphite, C black, or ochre are used. The image on the lithographic plate is readily visible and can be retouched immediately after the transfer process. If reflex copies are made on transparent sheets, the printing form is positive and the final offset copies are positive and readable. When the transferred image is positive, the residual image on the screen sheet is negative. The latter can be developed to an intaglio printing plate by chemically etching the open parts, thus also giving positive final copies.

*PHOTOLITHOGRAPHIC PRINTING FOILS. U. S. Patent 2,810,342, October 22, 1957. Wilhelm Neugebauer and Jakob Barthenheir (to Azoplate Corp.). Chemical Abstracts, Vol. 52, No. 2, January 25, 1958. The image foil is coated with an aqueous colloidal solution, such as gum arabic, cellulose ether or dextrin. For example, a parchment paper sheet is coated with a 1% aqueous solution of diazotized 4-amino-1-(2,3,4,6-tetrachlorobenzylamino)benzene and dried. After mechanically printing an image on the sensitized foil, a coating of water 75, dextrin 25, and H_3PO_4 1 part is applied, dried, and the foil exposed to light through the back. In the image areas, the diazo compound is decomposed to form a hydrophobic substance, which is the base for the fatty ink.

*PHOTOLITHOGRAPHIC PRINTING FOILS. U. S. Patent 2,810,341, October 22, 1957. Wilhelm Neugebauer and Jacob Barthenheir (to Azoplate Corp.). Chemical Abstracts, Vol. 52, No. 2, January 25, 1958, columns 943-944. Hydrophilic lithographic printing foils, such as regenerated cellulose or other saponified plastic films, are made light-sensitive with diazo compounds. An image is mechanically transferred to the sensitized foil by printing, writing, or drawing. The suitable diazo compounds, preferably having the formula $RYArN_2X$, in which R is an aryl, aralkyl higher alkyl, or aroyl group, Y is O, S, NH, or NR'; R' is an alkyl, aryl, or aralkyl group, Ar is an aromatic residue, and X is an equivalent of an acid anion, decomposing upon exposure to light giving ink-receptive substances. In a typical example, a parchment sheet of paper is treated with a 3% aqueous $ZnCl_2$ double salt of the equimolecular condensation product of paraformaldehyde and diazotized Ph_2NH and dried. A design is applied with a lithographic pencil and the foil then treated with a 1% aqueous solution of the Na salt of 1-(4-sulfophenyl)-3-methyl-5-pyrazolone to form an azo dye. The foil is then exposed to light through the back to produce a base for adhesion of the ink.

PAPER AND INK

INK-PAPER RELATIONS IN PRINTING. R. R. Coupe (PATRA, Leatherhead, England). British Paper and Board Makers' Association, Proceedings Technical Section 36, 669-78, discussion 679-82 (1955); cf. C.A. 49, 16430f. Chemical Abstracts, Vol. 51, No. 2, January 25, 1957, column 1605. Microscopic study of cross sections of printed paper has shown that on coated papers, having fine surface pores, the ink pigment remains on the surface of the paper and only the vehicle penetrates. If such a paper is highly absorbent, the pigment may be insufficiently bound to the surface and it will powder off. On uncoated papers, where the surface pores are much larger, the pigment can penetrate some distance into the paper. In all cases examined, the vehicle has been found to penetrate farther than the pigment. Penetration is controlled by the relative size of the pigment agglomerates in the ink and the effective pore size of the channels through the paper. Oxidation-drying of printing inks is retarded by the acidity of the paper (papers of pH below 5.0 may delay the drying considerably), sometimes by the sizing, and occasionally by the fiber furnish. The drying can be accelerated by adding a Co salt to the furnish, presumably to counteract the adsorption of the Co driers from the ink by the paper fibers.

FURTHER EXPERIMENTS WITH THE PATRA PRINT RUBPROOFNESS MACHINE. P.B.G. Upton and C. A. Tapper. PATRA Laboratory Report No. 11, December 1956, 17 pages. Further evaluation of a device described in Report #94, 1954, in which two rotating discs, one holding the print and the other a white card, are in plane contact under pressure. The amount of ink transfer to the white surface is judged visually, and evaluation is based on subjective panel ranking. Uncertainties are caused by low level of transfer, color differences, type of cushioning material, non-uniformity of rub because of design features, and print damage over the time of one run. Order of grading may be inverted by varying pressure or number of rubs. A modification in which the distance between centers

of the discs can be varied has given more uniformity of rub and is now under study.

WHAT FACTORS INFLUENCE INK CONSUMPTION. T. J. Craig. American Printer and Lithographer, Vol. 138, No. 11, November 1957, pp. 40-43, 4 pages. Ink coverage differs from paint coverage in the minimizing of film thickness to produce an effect. Consumption of ink therefore is affected by strength, specific gravity, consistency, condition of paper, and makeready. Specific gravity varies from approximately 1.20 to as high as 3.0, and consumption can be calculated directly from the specific gravity-price per pound data. Various conditions of paper, ink consistency, and makeready which increase ink consumption are discussed. Cost of optimum makeready may exceed the cost of using more ink to produce an acceptable job. A basic method for adjusting ink-water balance for minimum ink consumption is given.

INK. Offset Duplicator Review 7, No. 12, December 1957, pp. 7,8,10,60-68 (11 pages). The article gives a brief non-technical description of the use of inks for the offset process. Given are descriptions of problems and their solutions for ink drying, color, tinting, piling, stripping and picking.

INFLUENCE OF SALTS AND ACIDS ON THE METAL-SOAP CATALYSED DRYING OF LITHOGRAPHIC VARNISHES. R. R. Coupe. Journal of the Oil and Colour Chemists' Association, Vol. 40, No. 12, December 1957, pp. 1013-1023, 11 pages. A study of the effect of salts such as ammonium dihydrogen, phosphate, sulphate, citrates, nitrates, etc. and acids such as phosphoric, citric, and tannic on film drying on glass. Solutions of these materials are emulsified into the varnish. The increase in drying time follows low pH and increasing phosphate concentration, but the concentration of cobalt drier in the varnish determines the point at which sharp increases in drying time occur. This indicates a chemical inactivation of the metal dryer by components in fountain solutions through direct or syneryistic action. Many ions have only slight inhibiting effect. Experiments in which 2.03 g./l of cobalt nitrate or cobalt acetate were used as fountain solution with a standard ink drying time for press sheets were reduced as much as ten times.

LITHOGRAPHY - GENERAL

A LITHOGRAPHER'S PROBLEM, GETTING - PERFECT INDOOR CLIMATE - Part I. Jeremy Barnes. National Lithographer 65, No. 3, March 1958, pp. 38, 42 (2 pages). Many plants aspire to have their own perfect indoor climate and atmosphere but are prevented by: (1) Lack of understanding of what is involved, (2) Lack of capital or financing methods, (3) Lack of engineering knowledge to operate airconditioning units. These classic problems and possible solutions are discussed in Part I.

Part II will discuss costs and types of equipment and why the author selected a 100-ton custom built unit.

MEASURING WEB TENSION. Carl H. Ringe. Archives for Printing, Paper and Kindred Trades, 1958, First Edition, pp. 35-42, 8 pages. This article deals with some pressroom problems involving paper web tension. It is shown how the problem has been approached, what means are available to measure tensions and what we may learn from this research.

OFFSET PRESS ACCESSORIES. Anonymous. Printing Equipment Engineer, Vol. 88, No. 7, April 1958, pp. 36-37, 2 pages. The use of carefully selected press accessories is one of the means of cutting production costs. This report includes a discussion on ink drying devices, water fountain levels, ink fountain devices and dirt causes.

*INK ROLLER VIBRATING MECHANISM. U. S. Patent 2,826,989 - Application January 4, 1955. H. W. Gegenheimer and S. D. Robins - Assigned to Wm. Gegenheimer Co., Inc. Official Gazette 728, No. 3, March 18, 1958, p. 525. An inking roll for a printing press comprising a cylindrical sleeve, a pair of spaced, fixed, axially aligned spindles upon which said sleeve is journaled both for axial rotation and axial reciprocation through a predetermined amplitude, a pair of internal helical cams of opposite pitch disposed within said sleeve for movement therewith, said cams being coaxial with said sleeve and being axially spaced from

one another, a stationary support member disposed intermediate said spaced spindles and secured thereto, said support member being positioned radially within said cams, a pair of cam followers snugly but slidably mounted within lateral slots formed in said support member so as to be laterally movable to and from a cam engaging position and a cam disengaging position but restrained against movement with the sleeve and cams with each of said followers being associated with a different cam and cooperating with said cams to effect reciprocation of said sleeve, each of said cam followers including a rotatably mounted wheel that engages the cam when the follower is in its engaged position, a lever interposed between said followers and pivoted to said support member at a location generally centrally intermediate said followers with the ends of said lever being loosely engaged with the cam followers, said lever being effective to move one follower from its disengaged to its engaged position in response to the other follower moving from its engaged to its disengaged position, and a concentric cam provided at the end of each of the helical cams operative to cam the engaged follower laterally to its disengaged position.

MARTIN CHARTS TECHNICAL DATA FOR LITHO JOBS. Edward J. Martin. Printing News, Vol. LX, No. 17, April 26, 1958, pp. 3, 21, 2 pages. A review of Ed Martin's talk on handling plates on the press at the New York Employing Printers Association on April 15, 1958 is presented.

GRAPHIC ARTS - GENERAL

*IMPROVED METHOD FOR PHOTOGRAPHICALLY OR PHOTOCHEMICALLY PRODUCING A PRINTING PLATE. British Patent 738,958, Application December 4, 1953. William Warren Triggs, of Yorks & Clerk, 57-8 Lincoln's Inn Fields, London W.C.2. The British Journal of Photography, Vol. 104, No. 5086, November 8, 1957, p. 648. It has long been known that light sensitive resist materials can be prepared from polyvinyl alcohol usually sensitised with a dichromate salt. Coating of polyvinyl alcohol is used to prepare etching resists for photoengraving but the resistance

to strong mineral acids is not always satisfactory even when the images are heated to a very high temperature to harden them. The present invention therefore proposes to prepare resists from dichromated polyvinyl alcohol and treat the resulting stencil in a dye solution which it is believed increases the molecular weight of the polyvinyl alcohol layer and also allows a subsequent treatment in chromic acid to improve the hardness. The particular dyes that are suitable are of the natural aromatic organic type having a molecular structure which includes at least three nuclei and at least three hydroxyl groups attached to the carbon atoms of the said nuclei. Examples are logwood, haematein, and haematoxylin. It is believed that the treatment in the dye solution assists in the adsorption of the chromic acid to the polyvinyl alcohol layer when a subsequent bathing is carried out in such a solution. The resist stencils produced by the method described still have to be heated to improve their acid resistance but it is claimed that they are superior to stencils that are produced in the conventional way.

THE TRAIL BLAZER OF GRAPHIC ARTS RESEARCH. Victor Strauss, New York. Archives for Printing, Paper and Kindred Trades, Fourth Quarter, 1957, pp. 359-363, 5 pages. This is a fairly good summary of the history of LTF and some of its research activities and accomplishments under the direction of M. H. Bruno.

HIGH SPEED ELECTRONIC PRINTER. The Research and Engineering Coordinator, Vol. 4, No. 1, January 1, 1958, pp. 11-12, 2 pages. The Stromberg-Carlson S-C 5000 high speed printer is described. Output is stated to be over 3000 11 x 12" pages or 150,000 address labels per hour, either directly from a computer or from magnetic tape. Actual printing is by means of the Haloid "Xerox Copyflo" printer which records images produced by the Stromberg-Carlson seven inch Type C7C11 "Charactron" tube at the rate of 85,000 to 100,000 words per minute. This is at a rate of 10,000 characters per second.

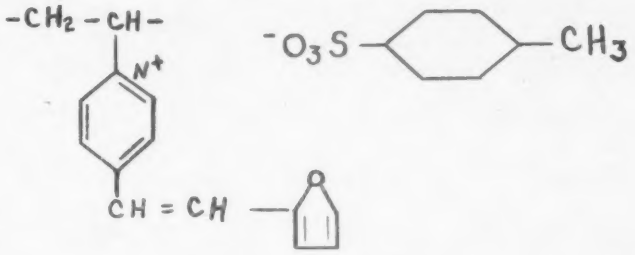
Very informative article.

*ETCHING. U. S. Patent 2,828,194, Application September 28, 1956, Serial No. 612,886. No drawing. 10 Claims. (Cl.41-43). Charles W. Hopkins and John A. Easley, Midland, Mich., assignors to the Dow Chemical Co., Midland, Mich., a corporation of Delaware. Official Gazette, Vol. 728, No. 4, March 25, 1958, page 842. 1. The method of etching the surface of an acid-soluble metal selected from the group consisting of magnesium, zinc, magnesium-base and zinc-base alloys said surface having portions thereof masked with an acid resistant coating, which includes: repeatedly impinging upon the surface of the object so as to contact both the masked and unmasked portions thereof an aqueous solution which contains (1) from 1 to 25 percent of HNO_3, (2) a water-immiscible organic liquid substantially unreactive with the aqueous nitric acid, and (3) between 0.4 and 2.0 percent of a component which includes a water-soluble, anionic, sulfate-radical-containing, surface-active agent containing at least one hydrophobic group of from 10 to 26 carbon atoms in an uninterrupted chain and said agent containing at least 8 percent sulfation.

*PHOTOPOLYMERIZABLE POLYVINYL ACETALS. British Patent 786, 119 - Application 10/8/54. DuPont. Ansco Abstracts 18, No. 3, March 1958, p. 116. The film-forming acetals, having a molecular weight of 6000 - 150,000 contain interlinear $-CH_2-CHOH-$ and intralinear $-CH=C$ groups in a conjugated double bond system. 20 - 90% of the polyvinyl alcohol OH groups are acetalized. The vinylidene group may be introduced by acetalization with a terminally unsaturated aromatic aldehyde, such as vinylbenzaldehyde or m-methacrylamidobenzaldehyde. Between .1 and 2% of a ketaldonyl photopolymerization catalyst such as diacetyl or a benzoin is added and a small quantity of hydroquinone to increase the storage life. The light-sensitive layers are cast or extruded. - 16 process & product claims.

*LIGHT SENSITIVE STILBAZOLIUM SULFONATES. Belgian Patent 551,487, 10/6/55. J.L.R. Williams to Kodak. Ansco Abstracts, Vol. 18, No. 2, February, 1958, page 74. The polyvinyl chain in the salts of this patent for relief image formation by

insolubilization on exposure to light is attached to the N atom of the pyridine instead of a C atom as in US 2,811,443 and 2,811,510 (abstracts 1303 and 1383/57). The most sensitive polymer results from the reaction of polyvinyl 4-picoline p-toluenesulfonate with furfuraldehyde in chloroform. The long conjugated chain including the furyl substituent is considered the cause of the outstanding sensitivity:-



*LETTERPRESS PRINTING MAKEREADY. U. S. Patent 2,825,282 - Application April 2, 1956. James B. Gergen and Thomas G. Wartman - Assigned to Minnesota Mining & Manufacturing Co., Inc. Official Gazette 728, No. 1, March 4, 1958, p. 63. A flexible, flat-lying, unitary sheet material of essentially uniform thickness adapted for makeready in letterpress printing by a process involving differential sustained expansion, said sheet material comprising a flexible, planarly-stable, carrier web, and, on at least one side thereof, a flexible, selectively-thermoexpansible, ink-receptive, hydrophobic layer comprising a hydrophobic, at least temporarily thermosoftenable, resinous material and, uniformly distributed therethrough, a normally-dormant, heat-sensitive, puffing agent activatible at a temperature well above normal room temperature to expand said layer under conditions of heat, said puffing agent being present in an amount sufficient to provide on rapid and complete heat-activation of said layer an increase of at least 2 mils in the thickness thereof, and said layer being hardenable in expanded condition to an extent sufficient to support pressures at least on the order of 250 p.s.i. for about 15 seconds while maintaining areas of maximum expansion at least approximately 2 mils greater than the initial thickness thereof. In a process of makeready for letterpress printing, the step of briefly exposing

a makeready sheet comprising a flexible, selectively-thermoexpansible layer, and having a differentially radiation-absorptive makeready pattern thereon, to uniform and intense radiant energy differentially absorptive by elements of said pattern to provide a heat pattern sufficient to expand said layer selectively.

AUTOMATION OF PRINTING MACHINES BY MEANS OF ELECTRIC CONTROLLING AND SAFETY DEVICES. von Georg Naevernick, Wurzburg. Archives for Printing, Paper and Kindred Trades, September 4, 1957, pp. 401-417, 17 pages. A survey of devices used to apply automation to printing presses. Infinitely variable speed motors for flat-bed presses such as those made by Electra are described. Paper control devices employing optical as well as mechanical sensing to correct for misfeeding on both flat-bed or rotary presses, either for letterpress, offset or gravure are described in detail. Register correction devices are only mentioned but the Auto-Paster is discussed at some length.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - JULY 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

RESOLUTION AS A MEASURE OF INTERPRETABILITY. Duncan E. MacDonald. Photogrammetric Engineering, Vol. XXIV, March 1958, pp. 58-62, 5 pages. Empirical data have been used to establish the relation between scale and resolution that provide equal levels of interpretability. It has been found that for a given photographic emulsion the level of interpretability of a photograph of resolution R at scale 1: n is the same as that of a photograph at resolution 2R at a scale of $1:\sqrt{2n}$. Results have shown that area (rather than a linear dimension) of just detectable objects on the negative is inversely proportional to the resolution.

*GELATIN SUBSTITUTES. British Patent 778,423 - Application February 1, 1954. D. A. Smith and C. C. Unruh to Eastman Kodak. Ansco Abstracts 18, No. 3, March 1958, p. 103. Allyl and methallyl esters of carboxy or carbalkoxy carbamic acids are homopolymerized or copolymerized with a vinyl compound to obtain materials which, due to their content of free carboxy groups, are swellable in water and form gels so that they can serve as gelatin substitutes. 20 process and product claims.

*PHOTOGRAPHIC APPARATUS. U. S. Patent 2,835,179. Application January 25, 1954, Serial No. 405,742. Murry N. Fairbank, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware. Official Gazette, Vol. 730, No. 3, May 20, 1958, page 593. 1. Photographic apparatus for copying sheet subject matter and comprising, in combination, a housing defining a substantially lighttight chamber within which a supply of photosensitive sheet material is mounted and through which said sheet material is advanced, support means defining a guide surface across which said photosensitive sheet is advanced, guide means defining a curved passage in the upper section of said housing communicating with

the exterior of said chamber for guiding a copy sheet through said passage into superposition with each of successive areas of said photosensitive sheet as the latter is advanced across said guide surface, closure means mounted within said passage for rendering said passage lighttight, means as mounting said closure means for pivotal movement that it may be deflected by a copy sheet to permit the movement thereof through said passage, means for holding said copy sheet in superposition with said photosensitive sheet and the latter in contact with said guide surface, the last-mentioned means including a pad roll at least the surface of which is formed of a substantially pliant material, means mounting said pad roll for movement toward and away from said guide surface and resilient means normally urging said pad roll toward said guide surface, means mounted within said chamber and including a source of illumination and shielding means for confining and so directing the light emanating from said source as to expose an area of said photosensitive sheet and the copy sheet superposed therewith to actinic light as said sheets are advanced across said guide surface and thereby form a record of said copy sheet in said area, a curved guide plate pivotally mounted adjacent said guide surface for thereafter separating said copy sheet from said photosensitive sheet during movement of said sheets across said guide surface and for guiding said copy sheet from said chamber, said guide plate providing one side of a curved passage communicating with the exterior of said chamber for guiding said copy sheet therefrom, and means located within said chamber closely adjacent said guide means for superposing a second sheet with said photosensitive sheet and so distributing a processing composition between the outer surfaces of said photosensitive and second sheets as to be capable of processing said sheets and producing a finished copy of said copy sheet, the last-mentioned means being so positioned within said chamber adjacent said guide surface that said photosensitive sheet is moved thereto from said guide surface in a light-free environment within said lighttight chamber.

NEW PHOTO-TYPESETTING SYSTEM INTRODUCED BY ATF. Gravure 4, No, 4, April 1958, pp. 42-43 (2 pages). The ATF Typesetter consists of two desk-top size units. The keyboard unit produces a typewritten proof and a common language perforated tape which is used to automatically operate the photographic unit. The latter unit also has a keyboard which may be used for the direct composition of miscellaneous unjustified material such as heads, captions or production messages. Plastic type discs each carry two fonts of type, and it is planned to make available all ATF's wide range of type faces. The operating speed of the keyboard unit depends upon the skill of the operator. The photographic unit will automatically produce 7000 characters per hour for 90% productivity for the current model. A high-speed attachment being developed will increase this to 10,800 characters per hour. The various operating features are described.

*ELECTROPHOTOGRAPHY ON PHOTOELECTRETS. V. M. Fridkin. Chemical Abstracts 52, Feb. 10, 1958, col. 1774-5; Ansco Abstracts 18, No. 3, March 1958, p. 83. A thin layer of sulfur is vacuum deposited on an aluminum or zinc plate and polarized during the deposition by an applied potential using gold-coated quartz as semi-transparent electrode. On exposure to light through a transparency depolarization occurs in the light-struck areas. The resulting latent image is developable by a powdered mixture of sand and sodium chloride. This type of electrophotography is considered analogous to magnetic type recording.

A "BREAK-THROUGH" IN LENS DESIGN. H. G. Morse. PSA Journal 24, No. 3, March 1958, pp. 36-38 (3 pages). The author surveys the improvements in photographic lenses due to the three advances in the (1) introduction of new rare earth glasses, (2) development of antireflection coatings and (3) the use of modern electronic calculating machines. Various examples of lenses whose development was due to these improvements are described.

THE PHOTOCALCULATEUR. Anon. Process 65, No. 770, February 1958, pp. 53 (1 page). A photoelectric computing exposure control device of French manufacture is described. Interesting features include a pickup head which is adjustably positionable to receive light from the focal plane within the camera, a sensitivity

suitable for exposures from a twenty-fifth second to several hours, and color sensitivity. Binary-coded push-button exposure settings are provided.

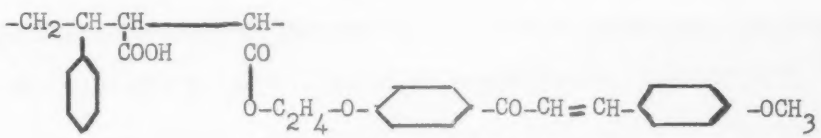
PLANOGRAPHIC PRINTING PROCESSES

THE ROLE OF PEROXIDE CATALYSTS IN COATING COMPOSITIONS. C.E.H. Bawn. Journal of the Oil and Colour Chemists' Association, Vol. 40, No. 12, December 1957, pages 1027-1034, 8 pages. Primary products of the air oxidation of many substances are peroxides which then may decompose through stages to various terminal products. Autoxidation of drying oils entails formation of such unstable peroxides which are decomposed into free radicals which in turn initiate polymerization reactions. The decomposition of hydroperoxides is induced by the heavy metal salts. Normal polymerization of drying oils follows a stepwise process in contrast to simpler chain sequences for vinyl polymerization. The unsaturated centers of the partial polymerized oil may, however, be copolymerized with vinyl monomers through free-radical initiation via the peroxides. This may be followed with condensation of the copolymer with a polyester. Bensoyl peroxide, methyethyl ketone peroxide, and cumene or tert.-butyl hydroperoxide are mentioned for use with metal-salt catalysts. Possible application in the making of "tailored" copolymers is discussed.

*ELECTROLESS DEPOSITION OF VANADIUM ALLOYS. U. S. Patent 2,828,227. Application March 30, 1956. Serial No. 574,995. No drawing. 5 claims (Cl.117-130). Philip H. Eisenberg, Hicksville, and Douglas O. Raleigh, Flushing, N. Y., assignors to Sylvania Electric Products Inc., a corporation of Massachusetts. Official Gazette, Vol. 728, No. 4, March 25, 1958, page 849. 1. An electroless plating bath containing in aqueous alkaline solution, a vanadium salt; a salt of at least one metal selected from the group consisting of iron, nickel, cobalt and chromium, the positive ions of the vanadium and metal salts being in their lowest ionic valence state, the combined concentration of said vanadium salt and said one metal salt falling within the approximate range 50-53 grams per liter; a hypophosphite salt having a concentration falling within the approximate range 10-20 grams per liter; a buffering agent; and at least one reducing and complexing agent which

maintains said positive ions in their lowest valence states and also forms at least one complex with said ions which is readily reducible to an alloy composed of vanadium and said selected metal when an electroless deposition operation is intended, said agent being selected from the group consisting of oxalic acid and its salts, said agent having a concentration falling within the approximate range 9-20 grams per liter.

*POLYMERS WITH CHALCONE GROUPS. U. S. Patent 2,816,091 - Application May 26, 1955. A.C. Smith, Jr., J.L.R. Williams and C.C. Unruh - Assigned to Eastman Kodak. Ansco Abstracts 18, No. 3, March 1958, p. 108. Polymers containing the chalcone group - C_6H_4-CH=CH-CO-C_6H_4- are known to be insolubilized by ultraviolet light but the double bond is susceptible to undesirable side reactions. Compounds of good solubility, in which the chalcone group remains intact, giving tough coatings and resist images, are styrene maleic anhydride copolymers which have been reacted with .25 - 1 mole of a chalcone compound, e.g.



14 process and polymer claims.

*LIGHT-SENSITIVE POLYMERS. British Patent 780,218 - Application April 23, 1954. duPont. Ansco Abstracts 18, No. 3, March 1958, p. 116. Relief images are formed by the photodepolymerization of polyacetals, polyimines, polyethers, or polytetrahydrofuran. The degradation of polyacetals can be accelerated by such compounds as acidic diazo compounds and phenyl trichloromethyl ketone, especially at temperatures of 100-150 C, that of polyethers by the ketone of benzoyl methyl ether. Where the depolymerization is reversible, the material is suitably covered with a layer of solvent for the degradation products. The image is developed by solvent treatment or, if the depolymerization products are volatile, by heating. - 15 process and product claims.

*ZIRCONIA-COATED PRINTING PLATES. U. S. Patent 2,814,988. 101/149.2. 5/19/54 - 12/3/57. S. W. Bradstreet and J. S. Griffith to Armour Research Foundation. Ansco Abstracts, Vol. 18, No. 2, February 1958, page 73. An aluminum or steel lithographic plate is cleaned, heated in an electric furnace to 200-260C and sprayed with an ammonium zirconyl carbonate solution containing 4% zirconia at a suitable rate so that a uniform thin white coating adhering tenaciously to the plate is formed. The coating consists of crystalline zirconia particles formed by thermal decomposition of the salt, having a particle size of 5-20μ. After coating with a conventional light-sensitive layer the plates yield printing plates of high wear resistance. Other metal salts subject to thermal decomposition to insoluble oxides or carbonates may be used. - 3 method and plate claims.

*QUINONEDIAZIDE SENSITIZERS. British Patent 788,975. 2/25/55 - 1/8/58. Kalle and Company. Ansco Abstracts, Vol. 18, No. 2, February 1958, page 72. The compounds are used in place of chromates to effect the light-hardening of natural or synthetic water-swellable colloids. Corresponds to German patent 1,003,576 (abstract 307/57). - 20 process and product claims.

PAPER AND INK

GLOSS INKS IN OFFSET PRINTING. Dr. Martin Hartmann, Frankfurt. Archives for Printing, Paper and Kindred Trades, September 4, 1957, pp. 397-400, 4 pages. While the matte appearance of offset printing was always desirable in the past there is a great demand for high gloss at the present time. In this article gloss is defined as being of function of surface smoothness and that one necessary requirement for gloss of ink is the smoothness of paper. Ink properties such as the ability to set quickly without losing gloss are also considered important to the problem of offsetting. The matching of ink to paper by the ink maker is emphasized.

METHODS OF AFFECTING THE DIMENSIONAL STABILITY OF PAPER. H. O. George. TAPPI 41, No. 1, January 1958, pp. 31, 32, 33 (3 pages). There are many factors which can be varied to affect the dimensional stability of paper. The physical

and chemical properties of the pulp, degree of refining, fiber orientation, and tension during drying are all closely related to hygro-expansivity. Beater additives and surface sizing may also have an influence, but often in the wrong direction. Calendering and the use of mineral fillers seem to have little effect on expansivity. The use of inert synthetic fibers such as glass can exert an influence out of proportion to the amount added. There are a number of "off the machine" treatments which are capable of reducing hygro-expansivity of paper. Most of these are relatively expensive and may drastically change other properties of the sheet. Some involve chemical modification of cellulose while others involve impregnation with thermosetting resins. Lamination of paper with plastic films or metal foils can be an effective means of producing a dimensionally stable sheet.

DIMENSIONAL STABILIZATION OF PAPER. W. P. Ericks and R. L. Slattery. TAPPI 41, No. 1, January 1958, pp. 38,39,40,41 (4 pages). Dimensional stabilizers for cellulose, known to the trade as Stab-U-cels, comprise a series of hydrocarbon compounds containing at least two hydroxyl groups attached to two different carbon atoms in a molecule. The hydroxyl group can be either alcoholic or acidic in nature and can be a part of a carboxyl group. The experimental work indicated that the Stab-U-cels possessed the greatest efficiency when the hydroxyl groups were located at a distance of at least eight carbon atoms in a straight chain molecule. It is believed that the Stab-U-cel molecules orient themselves parallel to the axes of cellulose molecules and are held in such position either by hydrogen bonding and/or ester linkage. The distance of eight carbon atoms in a straight chain molecule is approximately equal to the distance between two primary alcoholic groups attached to the two of the alternate anhydro-glucose rings of the cellulose molecule. It is suggested that the maximum dimensional stabilization is obtained when the Stab-U-cel bridges these primary alcoholic groups, thus increasing the cross section of the cellulose molecule and permitting the process of sorption to proceed with greatly improved resistance to changes in the dimensions of paper subjected to variation of humidity in the atmosphere.

NEW PROCESS FOR HIGH QUALITY PAPER. Anonymous. Printing Press and Publishing News, No. 132, March 6, 1958, page 1. A new process for manufacturing high-quality printing paper has been developed by the British Paper and Board Industry Research Association. Under the new process, it is said that the maximum yields of pulp from the esparto grass can be increased from 40 to 58 per cent with no apparent deterioration of the quality of the paper.

SOME CONSIDERATIONS ON INKOMETER (In Japanese). Hidesiro Sekimori, Minoru Tatumi, Sakata Co. Ltd. Shibatamati, Kita-ku-Osaka. Japan Printer, Vol. 41, No. 1, 1958, pp. 68-71 (4 pages). The inkometer is an important control instrument in ink industry, but its usefulness as an instrument of more fundamental research is different matter. So, we tried some approaches about every term mentioned below by replacing rollers.

(I) Factors affecting the observed values

a) Rotational speed, b) Roller (materials, physical properties),

c) Film thickness, d) Temperature, e) Time elapsed.

(II) Discussions on the observed values

a) Precision, b) Reproducibility, c) Relations between tack and length

(III) Relation to printability

a) Relations between printing speed and rotational speed, b) Tack values on printing presses, c) Misting, d) Fluidity

(IV) Some considerations on the modification of inkometer

A most important objection to inkometers use in fundamental investigation is the inability of obtaining data in fundamental units. Therefore, it is necessary to redesign the instrument for understanding the phenomenon of tack.

HANDLING PAPER IN THE PRESSROOM. Robert F. Reed. Modern Lithography, Vol. 26, No. 2, February 1958, pp. 36-39 (4 pages). This article gives the best system for handling paper in the lithographic plant to avoid feeding, wrinkling and register troubles due to temperature and R.H. Included are tables and graphs to illustrate the effects of temperature and R.H.

LITHOGRAPHY - GENERAL

SETTING PRESSURES FOR PRINTING. Charles F. Geese. National Lithographer 65, No. 2, February 1958, pp. 18,22 (2 pages). A correct method of packing the blanket cylinder consists of: (1) Placing the blanket on the cylinder without packing and tightening the blanket to correct printing tension, (2) Engage the plate and blanket cylinders in printing position (bearers touching), (3) Measure the packing required by placing a pile of 1 1/2" wide by 18" long by as close to 0.003" thick as available between the plate and blanket, (4) The number of strips required to give a pull-out with a fair amount of tension times the thickness of each strip (0.003") plus 0.004" for printing squeeze gives the correct packing required.

EFFECT OF TEMPERATURE ON VISCO-ELASTIC PROPERTIES OF METAL DECORATING FILMS (In Japanese). Hisao Kozima (Kyodo Printing Co.), Yasuo Huzikawa (Tokyo Ink Co.). Japan Printer, 1958, pp. 69,70,71,72,73 (5 pages). In order to obtain some information concerning effect of temperature on visco-elastic properties of metal decorating films, by pendulum hardness tester, decrement vibration times on the films was measured as a function of temperature, and logarithmic decrement curves were drawn and observed second order transition-points. Epoxy resin esters, epoxy resin estersmelamine resin systems and varnishes on the market was experimented. In the result of these experiments 1) behavior of softening films in oven at repeated baking was complicated, for example, in the case of epoxy-melamine resin films, also considerable softening was observed and 2) two or three transition points was observed in varnishes on the market.

*PRESSURE COPYING SHEET. U. S. Patent 2,810,661 - Application May 20, 1954. D. A. Newman and A. T. Schlotzhauer - Assigned to Columbia Ribbon & Carbon Mfg. Co. Ansco Abstracts 18, No. 3, March 1958, p. 117. A sheet in which the pigment composition separates cleanly from the transparent base upon the application of pressure, e.g. a typewriter, has a cellulose ester, cellophane, or, preferably, a polyethylene terephthalate (Mylar) support. The pigment composition of ethyl cellulose with carbon black or a metal powder contains oil-modified glycol sebacate

(Paraplex AL 111) as plasticizer which lessens its adhesion to the base and increase its affinity for the copy sheet. The sheet, after typing, can serve as photographic negative. - 4 product claims.

GRAPHIC ARTS - GENERAL

METALIZING - WHAT IT IS, WHAT IT DOES - IT'S DRAMATIC, EFFICIENT. Robert B. Goodman, Gomar Mfg. Co., Inc. Paper, Film and Foil Converter, Vol. 32, No. 2, February 1958, pp. 26-9 (4 pages). The article contains a brief description of details for the different processes for metalizing products. Metalization is lower in cost than foil/paper lamination, therefore development of new, unusual and striking containers may be produced.

*FERROMAGNETIC RELIEF IMAGES. U. S. Patent 2,823,999 - Application 1-7-55. F. A. Hamm - Assigned to Eastman Kodak. Ansco Abstracts 18, No. 3, March 1958, p. 116. In US 2,819,963 ferromagnetic iron oxide was added to a silver halide emulsion. The present patent covers the combination of the oxide with a light-sensitive relief forming polymer, e.g. the polyvinyl cinnamates of US 2,690,956. - 8 product and process claims.

*XEROGRAPHIC PLATE WITH INSULATING LAYERS. British Patent 789,802, 3/17/53 - 1/29/58. Haloid Company. Ansco Abstracts, Vol. 18, No. 3, March 1958, page 109. To prevent the injection of electrons from the conducting support, which has a large concentration of electrons, into the photoconductive selenium, sulfur, or anthracene layer in which exposure to light causes conductivity by production of free positive holes and electrons, an insulating layer, less than 1 μ thick, is applied between the two. Another insulating layer is coated on top of the plate to prevent the injection of positive holes as by deposition of gaseous positive ions. The photoconductive layer is preferably vitreous selenium, 20-80 μ thick, having a dark resistance of at least 10^{13} ohm/cm. The interlayer may consist of a polymer, e.g. polystyrene, wax, oxide, or sulfide of the support metal. Resins, waxes, paraffin may also form the top layer, or the selenium may be surface-oxidized to selenium dioxide. - 12 product claims.

AIMS AND OBJECTS OF PATRA'S OPERATIONAL RESEARCH. Anonymous. Printing Press and Publishing News, No. 130, February 20, 1958, page 9. Operational research, being carried out by PATRA, is now firmly established and in the last six months five firms engaged in flat bed letterpress printing have been visited. The main objective of operational research is accordingly to determine the major technological problems hindering productivity, and in this way to provide criteria for a re-appraisal of PATRA's current letterpress research projects.

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LITHOGRAPHIC ABSTRACTS - SEPTEMBER 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

*THE USE OF OPTICAL BRIGHTENING AGENTS IN THE PHOTOGRAPHIC INDUSTRY. L. Roosens (Gevaert). Phot. Korr, Vol. 94, #1-2/58, pp. 3-11, 19-26; Ansco Abstracts, Vol. 18, No. 5, May 1958, page 158. The use of colorless substances capable of emitting part of absorbed ultraviolet radiation in the form of bluish visible light was introduced in the textile industry about 15 years ago. The chemical classes of these compounds and the commercial products of 17 manufacturers are listed in tables. Their application in photography since 1911 as ultraviolet filters, for the brightening of prints and other purposes is reviewed, and the requirements for use in photography as well as their evaluation are discussed. About 100 references are given.

*WHAT'S AHEAD? L. E. Varden. Modern Photography, 22, January 1958, pp. 34, 36, 38, 3 pages. Monthly Abstract Bulletin, Vol. 44, No. 1, January 1958, page 37. The Minnesota Mining and Manufacturing Company has introduced a microfilm reader and printer that makes use of an electrolytic developing system. Upon exposure to light, a white surface layer becomes an electrical conductor, establishing contact with the aluminum laminate on the paper base. It is then immersed in an electrolytic developing unit (the developing process not being described in the article) to give a finished, nearly dry print. The process is reminiscent of one described by Wilcke (K. Wilcke: Phot. Korr., p. 173, 1920: Monthly Abstract Bulletin, 6: 305, 1920). He employed a glass plate coated with a transparent layer of gold or platinum, coated, in turn, with selenium, and covered with a paper moistened with an electrolyte and backed with a metal plate. Exposure through the glass plate caused the selenium to conduct electricity between the platinum layer and the metal plate, resulting in the formation of an image. Obstacles, at that time, included the difficulty of getting a uniform selenium layer and sensitizing it.

*TONAL CORRECTION OF MONOCHROMATIC IMAGES. German Application 1,010,376 57d 1/01 March 19, 1955. E. Hellmig to Agfa. Ansco Abstracts, Vol. 17, No. 9, September 1957, page 383. The correction of negatives by black-white masks often requires the making of several masks by trial and error to achieve the desired effect. If a colored mask is used its effect can be adjusted by variation of the color of the printing light. A yellow mask, for example, has its greatest effect in blue light, none at all in green light which it transmits. Negative and mask may be combined in a single 2-layer material whose emulsions may differ in spectral sensitivity, and both images may consist of dyes of different absorption. The coloration may be achieved, for example, by chromogenic development, the silver-dye bleach process, or dye mordanting.

*PHOTOSENSITIVE PLASTICS - WILL THEY REVOLUTIONIZE PHOTOGRAPHY. B. Schwalberg and G. Gaines. Popular Photography, July 1958, pp. 108, 110-1, 118; Ansco Abstracts, Vol. 18, No. 6, June 1958, page 219. Slide-O-Film, manufactured by Kalvar and marketed by C. Beseler Company, as 35-mm film or 2.25 x 2.25" sheets, contains, on a Mylar base, diazonium salts which are decomposed to nitrogen bubbles on exposure to ultraviolet radiation. By heating (immersion in boiling water or use of a heated roller) the bubbles are enlarged and form a light-refracting image which on projection or printing in the Slide-O-Printer acts like an opaque silver image. While the film is considered excellent for making prints from negatives without darkroom and chemicals, it is not recommended for color transparencies, although the high contrast can be reduced by a prefogging exposure of 5-15" in the printer.-The Du Pont Photopolymer Printing Plates, which are hardened by ultraviolet exposure and developed by an alkaline solution, are still in the experimental stage. In the Calimar plastic of Ferro Chemical Corporation polyvinyl chloride is decomposed by ultraviolet to form a colored image. It is being tested for industrial applications. G. Oster has been able to sensitize the photopolymerization of monomers to visible light by the use of dyes, but no commercial exploitation is expected in the near future.

NOTHING NEW UNDER THE SUN. ELECTRONIC PRINTING AND PHOTO-COMPOSITION IN THE 1890's. Thomas Dalby. Printing News, No. 133, March 13, 1958, page 2. Covers the interesting story of the inventions of Fries-Green in connection with photography and graphic arts. The electrolytic printing process covered by British Patent 27,243 (amended) November 1897 and photo-composition according to Patent 7,099 are described.

NEW INSTRUMENTS: ELECTRONIC PHOTO PRINTER. Anonymous. Review of Scientific Instruments, Vol. 28, February 1957, page 160; Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 386. "The Type T231 automatic electronic photo printer (Norden-Ketay Corp., New York) utilizes electronic control in 'dodging' negatives during printing. The basic system of printing with a brilliant spot of light, projected from a cathode-ray tube, which scans the negative and photo printing material, is used. Variations of density in the negatives are 'sensed' and evaluated in electronic circuits which compare the light value provided with that required to give the best possible print for the photo printing material in use. This information is fed back to control the intensity of the printing beam and, in so doing, automatically and correctly exposes each small area of the negative. Important factors in the performance of the instrument are the scanning pattern and the size of the spot of light as well as its spectral output."

PLANOGRAPHIC PRINTING PROCESSES

*OFFSET PRINTING PLATES. British Patent 793,550, June 9, 1955 - April 16, 1958. A. Spencer to Gestetner Ltd. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 205. An unhardened silver halide emulsion is coated on a subbed oleophilic support, which may be film, metal, or wet-strengthened paper. It is processed with a tanning developer or with a nonhardening developer followed by a copper sulfate-hydrogen peroxide etch bath, whereby a hydrophilic relief is left on the bared oleophilic support. In the 2 examples the support is cellulose triacetate film.

An example of a subbing solution contains chlorinated rubber, Paralac N-19X alkyd resin, and polyvinyl acetate.-12 process and plate claims.

*DEXTRAN PRINTING PLATES. French Patent 1,147,921, February 23, 1954 - December 2, 1957. G. Schwarz to Powers Chemco, Inc. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 206. Dextran, preferably of molecular weight 100,000 - 200,000 is used as 8% solution and sensitized with 1.4% of ammonium dichromate. The solutions having a pH of 4-5, keep for several months, and copper or zinc plates coated with them for a week or longer, whereas plates sensitized with dichromated glue usually have to be used within a day. An exposure of about 8' to a 45-w carbon arc lamp at a distance of 75 cm followed by washing with water for 1' produces a relief image.

*LITHOGRAPHY. U. S. Patent 2,841,079, May 20, 1953, Serial No. 356,303. Elbert A. Dulfer, Burlingame, Calif. Official Gazette, Vol. 732, No. 1, July 1, 1958, page 87. 1. As a new composition of matter, a material for treating a lithographic plate comprising one-half gallon 2-butoxyethanol, one-half gallon methanol, 1-1/2 pounds nickel chloride, one-half pound cuprous chloride.

*LITHOGRAPHIC PRINTING PLATES. French Patent 1,104,302. Filed in Germany May 28, 1953; France May 17, 1954. Kalle and Company. Monthly Abstract Bulletin, Vol. 43, No. 3, March 1957, page 142. Lithographic printing plates are prepared by coating on a support, e.g., grained aluminum, a layer of a light-sensitive aromatic azido group compound in which the azide-bearing nucleus is also substituted with either the sulfo group of a sulfonamide of a primary aromatic amine ($-SO_2NHAr$) or a primary amino group of a sulfonamide of an aromatic sulfonic acid ($-NHSO_2Ar$), e.g., 4,4'-diazidostilbene-2,2'-disulfanilide. The sensitive layer may also contain an alkali-soluble resin, e.g., rosin, to inhibit crystallization of the azido compound. The exposed coating is developed in a dilute alkaline solution, e.g., 2 percent sodium phosphate, treated with dilute acid, e.g., 1 percent phosphoric acid, and the resulting image is inked.

*LITHOGRAPHIC PRINTING PLATES. French Patent 1,031,581. Addition (Fourth) 63,708, March 21, 1952. B. Ostersetzer; W. Mauss. Assigned to Kalle and Company. Monthly Abstract Bulletin, Vol. 43, No. 3, March 1957, page 143. Lithographic printing plates are made by coating a support, e.g., grained zinc or aluminum, with a light-sensitive, water-insoluble, diazo-o-quinone derivative of an ester or amide of a benzene or naphthalene sulfonic or carboxylic acid, e.g., 2-diazo-1, 2-benzoquinone-4-N-[p-(2'-naphthol-1'-azo)-phenyl]-sulfamide exposing it to ultraviolet radiation through a negative transparency, and developing it with an organic solvent, e.g., ethanol or benzene, alone or in an admixture with water, which may also contain dissolved salt, e.g., calcium chloride. Developing removes the light-sensitive coating in the unexposed areas.

*DIAZO RESIN PRINTING PLATES. U. S. Patent 2,826,501 96/91 December 20, 1956 - March 11, 1958. G. R. Hodgins to Litho Chemical & Supply Co., Inc. Ansco Abstracts, Vol. 18, No. 6, June 1958, page 246. By adding a superpolyamide nylon resin (Du Pont Zytel #61) solution to a diazophenylamine-formaldehyde condensation product (Diazo Lith #1, Diazo Resin #4) the abrasion and chemical resistance of the light-sensitive diazo resin coatings is increased. 5 of the 7 product claims give a specific solution formula in which only the surfactant (.01%) is varied.

*EPOXY RESIN PRINTING PLATES. British Patent 794,572, May 9, 1955 - May 7, 1958. A. De Waile and J. H. Croker to Gestetner Ltd. Ansco Abstracts, Vol. 18, No. 6, June 1958, page 246. An epoxy resin, e.g. from epichlorohydrin and diphenylol propane having a molecular weight of 3000-8000, or Epikote Resin #1009, is sensitized by reaction with the chloride of an unsaturated acid, preferably with conjugated double bonds such as cinnamic, furylacrylic or phenyl butadiene carboxylic acid. If both fixed and resonance conjugation are present, as in the last named acid, the highest light-sensitivity is achieved. Different quinones and ketones, e.g. Michler's ketone or dicinnamylidene vinyl ketone catalyze the

photopolymerization of such resin layers. Unexposed resin is removed by swabbing with a solvent, and the relief is conditioned for the reception of greasy ink. - 14 process and product claims.

PAPER AND INK

*PAPER WITH REDUCED CURL. British Patent 785,338, June 3, 1955 - October 23, 1957. E. C. E. Hunter to Cassio Photographic Co. Ltd. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 186. A gelatin content of 7.5% or less in the baryta coating of photographic papers is liable to cause frilling and mottle, whereas a content of 12% or more results in high curl, and 10% gelatin is recommended. However, curl can be further reduced by mixing a pigment with needle- or plate-shaped particles with the rhombic barium sulfate or other pigment, or by applying it as a separate coating. The coating, for example, may consist of 90 parts baryta with 30 parts China clay and 10 gelatin, applied at the rate of 40 g. per m^2. - 9 product claims.

*PROGRESS IN OFFSET PRINTING: A PAPER WHICH REPELS WATER AND PERFECTLY ABSORBS INK. Gerard Martin. Imprimerie Nouvelle No. 20: September, 1957, pp. 12-13, 15, 17, 19 (in French); Bulletin of the Institute of Paper Chemistry, Vol. 28, No. 7, March 1958, page 980. The MN surfacing procedure recently developed in France completely eliminates the difficulties in color offset printing caused by the dimensional instability of paper. The procedure takes advantage of the differences between the surface tension of water and that of organic liquids in the composition of printing inks. It imparts to the paper properties similar to those of rubber by the deposition on its surface of extremely fine mineral particles (1-2 μ in diameter) which form a discontinuous hydrophobic barrier, thus preventing water droplets from wetting the surface, and, at the same time, permit the penetration of organic liquids of low surface tension. From several months of manufacturing and service experience it is concluded that the MN procedure results in a perfect dimensional stability of paper and in a definite improvement of its printing quality. 6 figures.

*MODERN PRINTING INKS AND COATED PAPERS. Gerard Martin. Papeterie 79, No. 11: November 1957, pp. 764-5, 767, 769 (in French); Bulletin of the Institute of Paper Chemistry, Vol. 28, No. 7, March 1958, p. 984. The printability of coated papers is determined by two factors: the porosity of the coating which must be sufficient to permit the penetration of the ink vehicle and resistance to picking, i.e., the force of adhesion between the coating and the base paper. A satisfactory balance of these two factors has been achieved with coatings containing an amount of adhesive sufficient to cover the mineral particles with an extremely thin layer. With the introduction of high-speed printing machines, the pick resistance of coated papers became too low; attempts to correct this defect by adding more adhesive to the coating mixture led to a decrease in the paper's receptivity for ink, caused by clogging of the pores in the coating. The modern glossy and quick-drying inks containing synthetic resins and in which the vegetable oils have been replaced by fast penetrating mineral oils demand increased pick resistance of coated papers. More adhesive in the coatings can prevent picking but causes offset troubles. It appears that a solution of these problems can be found only by revising coating methods and developing new coating formulations to combine high pick resistance with sufficient porosity.

PRINTABILITY STUDIES ON A SURVEY SERIES OF PAPERBOARDS AND COATED PAPERS. Jacqueline M. Fetsko. Technical Association of the Pulp and Paper Industry, Vol. 41, No. 2, February 1958, pp. 49-63, 15 pages. Numerical results from the laboratory proof press printing of solids were used to evaluate the reliability of the available instruments and empirical tests for smoothness and absorbency. The stocks studied initially included seven different types of paperboards and four coated papers.

WHEN PAPER TROUBLE STRIKES. Oscar Diehl. The National Lithographer, Vol. 64, No. 12, December 1957, pp. 32 and 34. The article covers the proper handling of paper and what can be done to correct wrinkling, static, and ink drying.

LITHOGRAPHY - GENERAL

*OFFSET PRINTING MACHINE. U. S. Patent 2,839,992, November 14, 1955. Serial No. 546,549. Lawrence H. Morse, assignor to Addressograph-Multigraph Corp., Cleveland, Ohio, a corporation of Delaware. Official Gazette, Vol. 731, No. 4, June 24, 1958, pp. 857-8, 2 pages. 1. In a rotary offset printing machine having a master cylinder, an impression cylinder, and an offset cylinder normally positioned to coact with the master cylinder to receive an inked image therefrom and to coact with the impression cylinder to transfer such image to a work sheet passed therebetween, means to support said offset cylinder for movement from said normal position to a second position to coact with the master cylinder to receive an inked image therefrom but separated from the impression cylinder, and for movement to a third position where it is separated from both master and impression cylinders, means acting automatically consequent upon the absence of a work sheet to move said offset cylinder to one of said last-named positions, and manually operable means to selectively determine such second and third positions.

*CLEANING DEVICE FOR ROTARY PRINTING MACHINE. U. S. Patent 2,832,289, September 28, 1954, Serial No. 458,738. Lester F. Mitchell and Edward J. Janke, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio, a corporation of Delaware. Official Gazette, Vol. 729, No. 5, April 29, 1958, page 1030. 1. In a cleaning device for removing ink from the surface of a rotary printing machine drum, a main frame adapted to be mounted on a printing machine, a supplemental frame movably mounted therein, a cleaner roll rotatably mounted in the supplemental frame with its axis parallel with the axis of the drum, manually operable means to move the supplemental frame to move said roll into and out of frictional driving engagement with the drum surface, means to apply a film of liquid ink solvent to said roll, said last mentioned means including a solvent applicator member coacting between a supply of the liquid ink solvent

and said roll and engaging the latter, a wiper movably mounted in said supplemental frame and being spaced from said applicator member in the direction of rotation of said roll, and means under control of the operator to selectively press said wiper into engagement with said roll to prevent further transfer of solvent to the drum surface and to remove ink and solvent from said roll whereby the roll presents a clean dry surface to the drum, or to so coact with said roll as to permit a thin film of solvent to remain on the roll and be transferred to the surface to be cleaned.

*INK FOUNTAIN BLADE. U. S. Patent 2,837,024. April 7, 1955, Serial No. 499,889. Douglas S. Dougan, assignor to John Waldron Corporation, New Brunswick, N. J., a corporation of New Jersey. Official Gazette, Vol. 731, No. 1, June 3, 1958, pp. 63-4, 2 pages. 1. A combined bottom plate and ink metering blade for an ink fountain adapted to cooperate with the fountain roll and be adjusted by thumb screws across its length to non-uniformly regulate the ink feed across the roll width comprising a resilient metal blade having a longitudinal metering edge for gauging the ink delivery onto the roll and a remote edge portion for mounting the blade, said blade having a plurality of narrow slits extending from near the mounting edge through the gauging edge to provide a plurality of tongues allotted one to each set screw, and a single sheet of flexible material secured throughout its full area to the upper or roll confronting faces of all of said tongues to seal the slits between them against ink leakage.

HUMIDIFICATION AND DEHUMIDIFICATION. J. R. Lewis. Share Your Knowledge Review, Vol. 39, No. 10, July 1958, pp. 16-20, 5 pages. Complete or partial air conditioning of pressrooms is stated to reduce operating costs by increasing the efficiency both of the operating personnel and of the tools and materials with which they work. The author takes up details of performance based upon printing requirements and explains how management can estimate the costs and the benefits of a complete or partial system.

INSTRUMENT FOR STATIC DETECTION AND MEASUREMENT ANNOUNCED. United States Radium Corporation, Morristown, New Jersey. Paper, Film and Foil Converter, Vol. 31, No. 11, November 1957, page 54. A new static tester has been developed by the United States Radium Corporation. The statometer is used to locate static areas so static eliminators may be used to correct this disturbance.

GRAPHIC ARTS - GENERAL

PRINTERS' ASTHMA. P. B. S. Fowler (Bromley Group of Hospitals, Kent, England). Lancet 263, 755-7 (1952). Chemical Abstracts, Vol. 50, No. 3, February 10, 1956, column 2187. Asthma is reported in 32 printers exposed to a spray composed of gum acacia and iso-PrOH. Fourteen other men had symptoms of sensitization to the spray fluid. In 1 company studied, 19% of the printers had asthma and another 30% had early symptoms. Substitution of dextrose for gum acacia should eliminate this hazard.

THE NEW ERA IN GRAPHIC ARTS. Martin Johnson. American Printer and Lithographer, Vol. 139, No. 4, April 1958, pp. 43-5, 3 pp. Time, Inc. developed a press plate prepared from photosensitive nylon composition by exposure to ultraviolet radiation. This is developed with a solvent which removes the portions of the composition which have not been insolubilized. With the nylon plate, a similar treatment is rendered for halftones, line work and type. Light from a large source passes through a negative and fans out in the photosensitive nylon. The soluble portions are removed from the surface of the plate with a developer. Depth to which the halftone will develop has already been determined by the exposure step. Depth of insolubilization is dependent upon length of exposure.

This plate, developed by E. I. du Pont de Nemours and Co. (Inc.), consists of a layer of photosensitive plastic (called "photopolymer" by the company) and a metal support. The plastic is also sensitive to ultraviolet light and is subsequently hardened by the action of such light. The hardening occurs throughout the entire

thickness of the plastic. This plastic is used in order to make a letterpress printing plate. Using a high contrast, photographic negative, similar to those used in photo offset, it is placed emulsion side down in intimate contact with the plate. Exposure from ultra violet light can be accomplished in two minutes or less for a plate as large as 20 x 24 inches. The relief image is produced by washing out the unexposed and thus unhardened plastic with a dilute alkaline water solution at room temperature. This washing operation can be accomplished in less than eight minutes. Du Pont engineers feel that a "photorelief" plate can be made ready to mount on the press in 15 minutes or less.

*THERMOGRAPHIC PRINTING PROCESS. U. S. Patent 2,798,959-60, 250/65, October 1, 1953 - July 9, 1957. A. J. Montcrieff-Yeates to RCA. Ansco Abstracts, Vol. 17, No. 9, September 1957, pp. 384-85, 2 pages. The electrical resistivity of a photo-conductive layer is changed by exposure to light in a camera and the resulting thermal image used to produce a visual image by means of a heat-sensitive material. This may involve a change in color (leuco rosaniline hydrochloride turning green at 100-200C, zinc oxide-vinyl chloride resin turning black at 120C, starch reacting with iodine on melting of the embedding gelatin medium), in transparency (fusion of wax), or loss of luminescence (manganese-activated zinc sulfide phosphor) or of magnetic properties (terrospinel held by a magnet). The light-sensitive material consists of a pack containing the heat-sensitive material between an upper electrically conducting NESA plate (glass treated with tin chloride at 400C) and a brass sheet connected to a current source, e.g. 1000-2000 volts for photo-conductive layers about .01" thick. The packs are light-sensitive only when voltage is applied. They may be preheated to a temperature 20C below that at which the visible image forms. - 20 and 6 respectively process and product claims.

*PRODUCTION OF ELECTROPHOTOGRAPHIC PRINTS. U. S. Patent 2,756,676, May 4, 1953. F. A. Steinhilper, Assigned to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 406. The initial processing cycle in a method for the production of

a plurality of electrophotographic prints comprises forming an electrostatic latent image on a photoconductive insulating member, developing the image with an electroscopic powder, and partially transferring the powder to a receiving sheet, such as paper. In subsequent processing cycles, the photoconductive member with its residual powder-image is uniformly charged, uniformly flooded with light to discharge the powder-free areas, redeveloped with an electroscopic powder, and brought into contact with a receiving sheet to which a portion of the powder image is transferred. Intensification of a weak powder-image is accomplished by a similar redevelopment technique.

*CLEANING RESIDUAL POWDER IMAGES FROM ELECTROPHOTOGRAPHIC PLATES. U. S. Patent 2,772,991, December 14, 1954. M. A. Insalaco, Assigned to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 407. The process of removing the residual powder-image from a photoconductive insulating layer, e.g., selenium, consists in passing across the surface of the layer a mixture of finely divided barium sulfate and a water-insoluble metaphosphate, e.g., zinc metaphosphate. The cleaning powder has the proper triboelectric relation to the toner particles and is nonabrasive. Any slight tendency towards dusting can be reduced by adding a little phosphoric acid.

*ELECTROSTATIC PRINTING. U. S. Patent 2,758,939, December 30, 1953. M. L. Sugarman, Jr., Assigned to Radio Corporation of America. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 407. A method of electrostatic printing comprises (1) placing a thin layer of photoconductive insulating powder, e.g., lead iodide, upon the upper surface of an electrode and spaced from an upper electrode; (2) illuminating the photoconductive powder with a light image; (3) establishing an electric field, e.g., about 11 kv. per inch, between the electrodes; and (4) re-depositing the photoconductive insulating powder on either the upper electrode, the lower electrode, or both, simultaneously, depending upon the duration and sequence of image illumination and electric field application and the polarity of the electrodes, to form visible powder images.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - OCTOBER 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

SEPARATIONS WITH AN ENLARGER, Part 8. James Nolan. National Lithographer, August 1957, pp. 18, 22, 27, 3 pages. Types of enlargers and details of their use for color separation are described.

MASKING THE JOB, Part 9. James Nolan. National Lithographer, September 1957, pp. 28-9, 2 pages. Details of highlight masking and estimating masks are discussed.

ESTIMATING THE MASKS, Part 10. James Nolan. National Lithographer, October 1957, pp. 46-7, 2 pages. Percentage of masks, slide rules and time gamma details are discussed.

MAKING COLOR CORRECTION MASKS, Part 11. James Nolan. National Lithographer, November 1957, pp. 26, 28, 30, 32, 4 pages. Details of making masks include use of Color Guides, diffusion sheets, exposure light, developer and density controls.

HOW TO USE "COX ANGLES" TO STOP 4-COLOR PATTERN. Frank H. Smith. Modern Lithography, Vol. 25, No. 11, November 1957, pages 57-8, 123, 3 pages. Method of avoiding 4-color pattern using standard four color screen angles but setting black printer at 135° instead of 45°. Has to do with inaccuracies of screen ruling.

IMPROVING COARSE SCREEN HALFTONES. John Tembeck. Industrial Photography, October 1957, pp. 48, 97, 2 pages. Abrupt changes in tone, emphasized by separated formation of conventional round or square dots reduced by use of elliptic stop when shooting halftones. The stop is used over camera lens for part of exposure.

THE SELECTION OF PHOTOGRAPHIC FILTERS FOR COLOR REPRODUCTION. K. H. Schirmer. Process, September 1957, pp. 343-346, 4 pages. A translation of a revised and abbreviated version of the paper read at the International Congress, Biarritz, 1957. Describes filters to use for making separations of standard printing. Includes drawings of transmission curves. Special attention must be given black printer filter selection. Curves showing absorption of colors of original sample shown.

VISUAL COLOR CONTROL. Anonymous. Graphic Arts Monthly, Vol. 29, No. 12, December 1957, pp. 84, 86, 88, 3 pages. What it is and how it works to provide a standardized visual means to determine required color changes in transparencies and how to make them.

COLOR CONTACTS CONTROLS. Charles C. Ball. Graphic Arts Monthly, Vol. 29, No. 12, December 1957, pp. 66, 68, 70, 72, 74, 76, 78, 80, 8 pages. Understanding the basic principles of color theory can produce a better color job. Basic review of nature of color, touches on color correction, use of gray scales, and compares point source of light to older types of printing light.

GETTING STARTED IN COLOR. Anonymous. Graphic Arts Monthly, Vol. 29, No. 12, December 1957, pp. 20, 22, 24, 3 pages. The article is an example of how the Research Institute training program for press crews is used to solve a particular problem. Procedure is from the Institute's training manual and lesson plans.

PHOTOGRAPHY OF HALFTONE COPY. Robert L. Yinger. Graphic Arts Monthly, Vol. 29, No. 10, October 1957, pp. 50, 52, 56, 58, 4 pages. The process photographer frequently finds it necessary to rescreen halftone copy, since in many cases a halftone print is the only copy available for reproduction. A description of various methods to reproduce halftone copy by rescreening.

SEPARATION NEGATIVES FROM REFLECTION COPY. W. O. Morgan. Graphic Arts Monthly, Vol. 29, No. 11, November 1957, pp. 74, 76, 134, 3 pages. Report of a demonstration of a fast and relatively simple way of making separation negatives from reflection copy.

COLOR ELECTRONICS IN PLATEMAKING. Walter Stearns. Graphic Arts Monthly, Vol. 29, No. 11, November 1957, pp. 66, 68, 70, 3 pages. Time-Life Color Scanner is cutting down amount of hand color correction on separation negatives.

3-COLOR DIRECT SEPARATION USING GRAY CONTACT SCREENS. Gyan P. Madan. Graphic Arts Monthly, Vol. 30, No. 7, July 1958, pp. 66, 68, 70, 72, 4 pages. The neutral gray contact screens have been designed especially for the lithographer who wants to make direct screen separations. How to angle the contact screen is described

with diagrams included.

THEORY AND PRACTICE MUST BE COMBINED. Edward R. Atkinson. Graphic Arts Monthly, Vol. 29, No. 8, August 1957, pp. 112, 114, 116, 120, 4 pages. Two sets of 4 color positives are made and discussed to help in the production of color plates.

SWISS LITHO TECHNIQUE (2). Frank H. Smith. Modern Lithographer and Offset Printer, Vol. LIII, No. 8, August 1957, pp. 24-26, 3 pages. Many Swiss and other European countries use "Vara" process of color masking separation negatives. This method masks for bright colors and does not affect middletones. Need highlight mask, contrast reducing mask before making color correction mask.

FURTHER THOUGHTS ON "VARA" COLOR MASKING (1). Frank H. Smith. Modern Lithographer and Offset Printer, Vol. 53, No. 11, November 1957, pp. 15-18, 4 pages. Further discussion of "Vara" system of masking for transparencies started in August 1957, issue Vol. 8, No. LIII. Diagrams of separation negatives and filter masks.

FURTHER THOUGHTS ON VARA COLOR MASKING (2). Frank H. Smith. Modern Lithographer and Offset Printer, Vol. 53, No. 12, December 1957, pp. 15-17, 20, 4 pages. Vara masking is similar to two stage masking as now described in Kodak publications but with the suggested variation in this article of lower density range in the first masks now called pre-masks. A discussion of black printer separation is started.

FURTHER THOUGHTS ON "VARA" COLOR MASKING (4). Frank H. Smith. Modern Lithographer and Offset Printer, Vol. LIV, No. 2, February 1958, pp. 14-6, 3 pages. Continuation of article on "Vara" method of masking. This article discusses black printer. Diagrams of yellow, cyan, and black printer.

TYPE STRETCHED OR SQUEEZED TO SUIT WARWICK CUSTOMERS. Anonymous. Inland Printer, Vol. 140, No. 3, December 1957, pp. 60-1, 75, 3 pages. The "Flex-set" process of changing type is described as performed by Warwick Typographers, St. Louis. Plexiglass prisms are used in pairs one over the copy and the other over the film. The curved prisms are hollow and filled with mineral oil.

MAKING HALFTONES WITH A CONTACT SCREEN. James F. Nolan. National Lithographer, Vol. 65, No. 2, February 1958, pages 24, 26, 2 pages. Chart showing exposure data for a set of separation negatives in conjunction with 150 line magenta contact screen. Article describes briefly what to look for in making halftones. A diagram for a device to fit copy holder bars, which has an opening to fit 11 x 14 dry plates, is included.

ELECTRONIC COLOUR SEPARATION (2). Frank H. Smith. Modern Lithographer and Offset Printer, Vol. LIV, No. 4, April 1958, pages 29-30, 2 pages. Comparison of the mechanics and operations of the R.C.A. Color Scanner, the Log-E-Tronic Printer and the Crosfield "Scanatron." Diagram of Crosfield instrument included.

THE CAPROCK UNIVERSAL GRAY CONTACT SCREEN. Seymour Schwartz. The American Pressman, Vol. 68, No. 1, January 1958, pp. 44-6, 48, 4 pages. Describes difference between Caprock and other contact screens. Diagrams and photomicrographs of Caprock screen are shown. Gives characteristics of screen. Has density range of 1.6.

A COLOR CHART FOR USE IN EVALUATING QUALITY OF COLOR REPRODUCTION. Edwin J. Breneman (Eastman Kodak Co). Photographic Science and Engineering 1, 74-8 (1957). Chemical Abstracts, Vol. 52, No. 4, February 25, 1958, column 2624. The materials and construction of a chart used to facilitate quantitative evaluation of the quality of color reproduction obtained with various photographic processes are described. The chart includes 9 saturated, 7 achromatic, and 8 desaturated colors. Permanent pigments are used so that the chart can be used in direct sunlight without fading or discoloration.

PLANOGRAPHIC PRINTING PROCESSES

SUCCESS WITH THE IDEAL LITHOGRAPHIC PLATE. Anonymous. Printing News, No. 106, September 5, 1957, page 15. "Nu chrome", a bi-metal plate by Coates Brothers, is claimed to have the advantages of the bi-metal principle and is simple to print down as a deep-etched zinc or aluminum plate. The Nu-chrome plate has a recessed image of electrodeposited copper, a water receptive chromium non image area which protects the recessed image from wear. The supporting metal is mild steel and

runs in excess of one million impressions are normal.

*SURFACE TREATMENT OF ALUMINUM, ALUMINUM ALLOYS, AND LIGHT METALS. Spanish Patent 229,149, July 7, 1956. Ricardo Salcedo Gumucio. Chemical Abstracts, Vol. 51, No. 5, March 10, 1957, columns 3329-30. The bath consists of a 25 g./l. solution of Na metasilicate; a c.d. of 5 amp./sq.dm. is used at the start, at 400 v., and the temperature of the bath is 25-80°. It takes 1-2 hours to produce thick coatings of SiO_2. The coatings can be dyed with alkaline aniline dyes.

WATERCOTE PROOFING. Bernard Gasser. Graphic Arts Monthly, Vol. 29, No. 8, August 1957, pp. 132-42, 11 pages. A description of color proofing done before albumin plates are made. In principle, Watercote works like albumin platemaking; except in place of metal, Loftrite white opaque non-stretch base is used. Procedure: Place plastic base in whirler and coat with a selected color pigmented solution. Plastic base is placed in vacuum frame and exposed through desired negative. Flush with weak ammonia solution and rinse with water. The above procedure is repeated on the same plastic base for each color desired. The final product is a simulated multicolor press sheet.

DOTS NOW YOU SEE 'EM NOW YOU DON'T. Don Grant. Graphic Arts Monthly, Vol. 29, No. 8, August 1957, pp. 92,94, 2 pages. "Ghost dots" are discussed as a source of trouble from camera room to plate room. Means of illuminating area of negative so ghost dot can be seen is discussed.

*LIGHT-SENSITIVE MATERIAL FOR PHOTOMECHANICAL REPRODUCTION. U. S. Patent 2,766,118, October 9, 1956. Oskar Sus and Maximilian P. Schmidt (to Azoplate Corp.). Chemical Abstracts, Vol. 51, No. 8, April 25, 1957, column 5608. Hydrazine derivatives coated on a metal support form a light-sensitive layer which after exposure may be developed by a weakly alkaline solution of mono- or di-Na phosphate and then inked and used as a printing plate. The hydrazine derivatives suitable for this purpose are made by condensing equimolecular quantities of 1,2-naphthoquinone-2-diazide-5-sulfonyl chloride (I) with benzoic hydrazide in the presence of pyridine to give a product (II), m. 210° (decomposition);

I with 1-naphthoic hydrazide gave a product, m. 210°; I with p-toluenesulfonyl hydrazide gave a product, m. 135° (decomposition); I with 2-naphthalenesulfonyl hydrazide gave a product, m. 175° (decomposition); I and benzophenone hydrazone gave a product, decomposing above 90° (from EtOAc); 1,2-naphthoquinone-2-diazide-4-sulfonyl chloride (III) and benzophenone hydrazone gave a product, decomposing above 175° (from HOAc); 2.2 moles I and 1 mole N_2H_4 gave a product, charring 150-250°; III and phenanthrene-3-sulfonyl chloride gave a product, decomposing 135°; II was treated with Me_2SO_4 and gave a product, sinters 160°, decomposing 190°; benzoxazolone-5-sulfonyl chloride with 1,1-diphenylhydrazine gave a product, sinters 75°, m. 100° (decomposition); I and 1,1-dimethylhydrazine gave a product, decomposing slowly above 130°; I and acetophenone hydrazone gave a product, m. 220-5° (decomposition); I and cyclohexanone hydrazone gave a product, chars and decomposition; and I and $PhCH{:}NHNH_2$ gave a product, m. 110°.

*TREATING SOLUTION FOR PHOTOLITHOGRAPHIC PLATES. U. S. Patent 2,773,779, December 11, 1956. Frederick E. Brinnick and Charles H. Van Dusen, Jr. (to Addressograph-Multigraph Corp.). Chemical Abstracts, Vol. 51, No. 7, April 10, 1957, column 4855. A treating solution which will render the imaged areas of a developed diazo planograph printing plate immediately wettable by ink while leaving the non-image areas clean and receptive to water is obtained by dissolving 0.1-5% of a water-insoluble soap (I) in oleic acid. I consists of Al, Zn, Ca, or Mg salt of oleic, stearic, or palmitic acid, e.g. Mg oleate. Other treating agents are oleic acid alone or containing dissolved Oil Orange (color index no. 24); powdered Al stearate; powdered Oil Red (color index no. 258); powdered Hansa Yellow suspended in olive oil; Silicone Oil 9981 LT70NV (General Electric Co.); polymerized turpentine; and cottonseed oil. Cf. C.A. 49, 2239a.

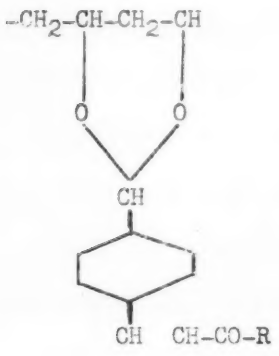
*POSITIVE DIAZOTYPE PRINTING PLATES. U. S. Patent 2,772,972, December 4, 1956. Clifford E. Herrick, Jr., Peter Woitach, Jr., and Edward J. Trojnar (to General Aniline and Film Corp.) Chemical Abstracts, Vol. 51, No. 4, February 25, 1957, column 2438. Positive offset-printing plates are produced by coating a base material

with a copolymer of vinyl Me ether and maleic anhydride and with additional layers of a water-insoluble, alkali-resistant adhesive resin and a light-sensitive, water-insoluble diazo oxide which is soluble in liquid aliphatic esters, ketones, or alcohols. Thus a solution containing 2-diazo-1-naphthol-5-sulfonic acid ethyl ester 2.0, a PhOH-modified coumaroneindene resin 2.0 g., and Me iso-Bu ketone 100 ml. was applied by dip beading onto the lacquered surface of a wet-strength, clay-resin surfaced paper which had been coated with a lacquer containing 1.2 g. poly(vinyl ether)-maleic anhydride copolymer (d. in MeCOEt 1.8-2.5), and 0.3 g. high-Ac, high-viscosity cellulose acetate (61.8% combined AcOH), 20 ml. methylene chloride, 5 ml. methyl Cellosolve, and 75 ml. acetone. After exposure to light on a white print machine, the plate was swabbed with a mixture of 77 ml. ethylene glycol and 23 ml. glycerol and then with a mixture of 10 parts diethanolamine and 90 parts glycerol. Other suitable diazo compounds include N-dehydroabietyl 6-diazo-5(6)-oxo-1-naphthalenesulfonamide and N,N'-didehydroabietyl-N,-N'-ethylenebis 6-diazo-5(6)-oxo-1-naphthalenesulfonamide. Al offset plates having surfaces prepared as in U. S. Patent 2,637,929 (C.A.47,8292e) were sensitized by coating with a 2% solution of N,N'-4,4'-biphenylenebis 6(5)-diazo-5(6)-oxo-1-naphthalenesulfonamide in dimethylformamide.

P.V.A. (POLYVINYL ALCOHOL). J. T. Astley. Process Journal, No. 25, Spring, 1958, pp. 11-12, 2 pages. Polyvinyl alcohol (P.V.A.) is manufactured by the controlled polymerization of vinyl acetate and subsequent hydrolysis of the acetate groups with either an acid or alcohol. The ratio of acetate to alcohol groups remaining in the final product may be controlled so that P.V.A. may be tailored to a specific end use. A coating for a P.V.A. resist suitable for zinc photoengraving may be made by dissolving 1 ounce of 11-14% residual acetate P.V.A. in 10 ounces of water and then adding 1 ounce of a 2% solution of ammonium bichromate solution. This solution should be freshly made prior to use. The plate may be whirler coated at 150-200 rpm. and exposed 5-10 minutes. The image is developed by washing with water and dyed in a solution of 1 ounce of Erythrosine

per 15 ounces of water. The image is hardened with a 2% solution of chromic acid and burnt in at a temperature of 450°F.

*LIGHT SENSITIVE POLYVINYL ACETALS. U. S. Patent 2,787,546, February 8, 1955-April 2, 1957. A. C. Smith, Jr., D. A. Smith and C. C. Unruh to Eastman Kodak Co. Ansco Abstracts, Vol. 17, No. 9, September 1957, page 380. The acetals result from the condensation of polyvinyl acetate with p-formyl-cinnamic acid, monoterephthalacetophenone, or monoterephthalal-p-methoxy-acetophenone, and contain recurring units, where R = OH or p-methoxyphenyl. When exposed to light the polymers become insoluble in hot water or aqueous alcohol. The conjugated cinnamoyl group is believed the cause of the photosensitivity surpassing that of polyvinyl cinnamic aldehyde acetal. The products are suggested for use in lithographic plates, the silk screen process, for pigmented images, and for colored designs on photosensitive glass. - 5 product claims.



*LIGHT-SENSITIVE MATERIAL. U. S. Patent 2,773,767, December 11, 1956. Martha Tomanek and Wilhelm Neugebauer (to Azoplate Corp.). Chemical Abstracts, Vol. 51, No. 6, March 25, 1957, column 4188. Acenaphthene, substituted with halogen, nitro, alkoxy, acylated amino, or COR groups in positions 5 or 5 and 6, where R is an alkyl, aryl, or alkylene group, is used to form a sensitive layer on material for the production of printing plates. An alcohol, alcohol-dioxane, or glycol monomethyl ether solution of an acenaphthene derivative is applied to an Al plate with a roughened surface. The plate is exposed to light under a negative pattern, developed with an acid solution containing 5% alcohol, and the image is rubbed in with greasy ink to produce a positive plate.

*PLANOGRAPHIC PRINTING PLATES AND LIGHT-SENSITIVE MATERIALS. German Patent 929,460, June 27, 1955 (Cl.57d,201); cf. C.A.24, 3187. Kalle & Co. (Oskar Sus

and Werner Schafer, inventors). Chemical Abstracts, Vol. 52, No. 7, April 10, 1958, column 5178-5179. Excellent planograph printing plates are obtained by coating light-sensitive aromatic azido compounds dissolved in an organic solvent and coated on a metal base, e.g., Al and Zn. In these compounds, the azido bearing nucleii are modified by an aminosulfonyl or sulfonamido group. Crystallization inhibiting resins, e.g., alkali-soluble resins, can be incorporated in the solution of azido compounds to aid in coating thin films. Exposure to light results in a brownish golden to a violet-red image in the exposed areas. This image is developed by treatment with dilute alkali, followed by a dilute acid (e.g., H_3PO_4) wash.

*LIGHT-SENSITIVE MATERIALS FOR LITHOGRAPHIC PRINTING. U. S. Patent 2,767,092, October 16, 1956. Maximilian P. Schmidt (to Azoplate Corp.). Chemical Abstracts, Vol. 51, No. 5, March 10, 1957, column 3334. Esters of quinone-(1,2)-diazide-sulfonic acids and cyclic alcohols are used to produce light-sensitive layers on printing plates. The following esters were prepared: cyclohexyl naphthoquinone-(1,2)-diazide-(2)-5-sulfonate, decompose 124° (from alcohol); menthyl naphthoquinone-(1,2)-diazide-(2)-4-sulfonate, m. 160° (from aqueous dioxane); cyclohexyl naphthoquinone-(2,1)-diazide-(2)-4-sulfonate, m. 160° decomposing 170° (from C_6H_6); and bis naphthoquinone-(1,2)-diazide-(2)-5-sulfonic acid ester of 2,2-bis(4-hydroxy-cyclohexyl)propane, decomposing 85°. These esters, in 1.5% solution in glycol monomethyl ether, were coated on Al or Zn foil, dried, exposed to light through a master pattern, and developed with a 5% solution of soda to give a diazo image. The plates were wiped with 1% H_3PO_4 and then inked to give a positive image which could be used for printing.

*LITHOGRAPHIC OFFSET-PRINTING PLATES. U. S. Patent 2,763,553, September 18, 1956. Walter Clark and Herbert B. Cowden (to Eastman Kodak Co.). Chemical Abstracts, Vol. 51, No. 5, April 10, 1957, column 3336. The method of transferring unhardened emulsions after development (cf. C.A. 46, 10988f) is applied to the preparation of lithographic printing plates. After tanning development, the hardened image remains, whereas unhardened areas of the emulsion are transferred to a hydrophilic surface

which repels greasy printing inks when wetted in the printing operation. The transferred layer is exposed to dry heat at 150-275° for a maximum of 3 minutes in order to increase its ink receptivity and to decrease its absorption of moisture. CF. C.A. 50, 710b.

*LIGHT-SENSITIVE POLYMERS FOR PHOTOGRAPHY. U. S. Patent 2,811,509, October 29, 1957. Donald A. Smith, Albert C. Smith and Cornelius C. Unruh (to Eastman Kodak Co.). Chemical Abstracts, Vol. 52, No. 4, February 25, 1958 columns 2624-2625. Light-sensitive polymers suitable for use in photomechanical processes for the preparation of resist images are formed by reaction of maleic anhydride with an aromatic amine. Thus, a solution of 2.0 g. Et 4-aminocinnamate (I) in 10 ml. pyridine (II) was added to a solution of 2.0 g. of a 1:1 styrene-maleic anhydride copolymer in 20 ml. dry II. The mixture was heated for 20 hours on a steam bath and the product was precipitated in dilute AcOH. This polymer was coated on a support, exposed to ultraviolet light through a halftone negative, and developed with MeCOEt to give an insoluble polymer relief image. Other compounds used instead of I were 2-(m-aminobenzylidene)acetophenone, 4'-aminochalcone, 2-piperonylidene-4'-amino-acetophenone, diethyl p-aminocinnamylidenemalonate, 5-aminoacenaphthene, and 1-(p-aminobenzylidene)-3-(p-emthoxybenzylidene)acetone.

*WATER SOLUBLE GUMS OF IMPROVED WATER SOLUBILITY. U. S. Patent 2,807,591, September 24, 1957. John E. Henry (to Hercules Powder Co.). Chemical Abstracts, Vol. 52, No. 4, February 25, 1958, column 3380. A method is described for improving cold-water dispersibility of a hydrophilic gum which otherwise tends to clump. The gum is admixed in the dry state with a water-soluble mixture which evolves sufficient CO_2 upon addition to H_2O to disperse the gum and reduce the tendency to form agglomerates. Mixtures producing CO_2 suitably are $NaHCO_3$ or Na_2CO_3 and an acid, such as $NaHSO_3$, NaH_2PO_4, or citric acid. Thus, Na carboxy-methylcellulose required 18.6 minutes to dissolve under a given set of conditions. However, by previously admixing it with 32% Na_2CO_3 and 18% $NaHSO_3$, the solution rate was less than 30 seconds under the same conditions.

PAPER AND INK

FLUORESCENT PRINTING INKS. J. L. Switzer. The American Pressman, April 1958, pages 6-8, 3 pages. Fluorescent pigments of a particle size under 3 microns are now available for formulating letterpress and offset inks. High pigment concentration and heavy ink films are required for maximum optical effect and light fastness. Two impressions are often used to increase color and brightness. Window posters may have a life of 30 days if a good deposit is used. The inks are formulated to set fast and dry tack-free within 20 minutes. No cobalt driers may be used. Application is to solids and large bold type since halftones would fill in. Press cleanliness is emphasized because fluorescent properties are sensitive to contamination. The name Day-Glo is a trade mark of Switzer Brothers, Inc.

SYNTHETIC RESINS FOR PRINTING INKS. Hercules Powder Company. American Ink Maker, Vol. 36, No. 2, February 1958, pages 40-3, 67, 5 pages. A review of the requirements of resins for use in inks for the various printing processes, and descriptions of how the products offered by this firm meet these requirements. Gloss and heat-set typographic inks, Flexographic, steam-set, water based, Intaglio, Lithographic, and Specialty inks are covered. Heat-set Offset inks are noted as a growing class of inks, which require fast solvent release and hardness as well as water resistance. The requirements of overprint varnishes for the increase of gloss are given.

TINTING. Charles H. Borchers. American Ink Maker, Vol. XXXV, No. 9, September 1957, pp. 31, 33, 69, 3 pages. Tinting is defined as the appearance of emulsified ink particles in the non-image areas of a printed sheet. The production of such emulsions is thought to be connected with lowering of interfacial tension between ink and water through the action of surface active agents. The chemicals in paper coatings are suspected of contributing to tinting trouble according to press experience. Tests of solutions made of scrapings of coatings are reported. Evaluation of foaming of such solutions give only fair correlation with press experience, and determinations of surface tension give poor correlation. The paper dipping method

of J. H. Bitter is cited, and a modification in which the acidity of the solution was varied is reported as giving good correlation. The combination of fountain solution additives and surface active materials in paper is suggested as a possible cause of tinting. Such materials in paper are shown to be concentrated on the surface.

THE MEASUREMENT OF FIBRE LENGTH WITH A SEMI-AUTOMATIC RECORDER. Pamphlet. Marja-Sisko Ilvessalo-Pfaffli and Georg v. Alfthan. Reprint from Paper and Timber, Vol. 39, No. 11, 1957, pp. 509-16, 8 pages. This paper is concerned with the semi-automatic method of the Finnish Pulp and Paper Research Institute for the measurement of fibre length. The measuring apparatus, the preparation and the measuring procedure are described. The method is an optical projection method, according to which a stained fibre preparation is projected from below on a screen, using 50 X magnification. The lengths of the fibres are measured from the projected image by means of the curvimeter of the fibre length recorder. The recorder divides the measured fibres into length groups, at 0.2 mm intervals, and gives automatically the number of fibres in each group, as well as the total length and total number of the measured fibres. The measuring is carried out very quickly and easily, 600 fibres being measured without difficulty in 30 minutes by a trained operator. The measuring procedure is compared with the previous measuring method, in which the precise lengths of the fibres were measured with the assistance of a map curvimeter. The preparation is described in detail, and some advantages of the method discussed. Statistical data is included, in order to show the accuracy of the method and of the measuring procedure.

INVESTIGATIONS ON OXYDATION OF PRINTING INKS AT DECREASED OXYGEN SUPPLY. Anonymous. Grafiska Forsknings-laboratoriet, Meddelande NR 40, March 1958, pages 62-67, 6 pages. (In Swedish). In the middle of a pile of printed sheets the oxygen supply is less than at top of the pile. Printing inks that are drying by oxydation will often show quite different rate of drying at top and further down in the pile. A method for studying the effect of decreased oxygen supply is described.

Both letterpress and offset inks have been tested. The effect of different kind of driers have been investigated. The advantage in this respect of a drier like Grafo Drier has been experimentally confirmed.

FLYING OF PRINTING INKS. Anonymous. Grafiska Forsknings-laboratoriet, Meddelande NR 40, March 1958, pages 30-40, 11 pages. (In Swedish). A general discussion of ink flying, its causes and disadvantages is given. The main part of the article is however dealing with some experiments on ink flying, that has been carried out at the Graphic Arts Research Laboratory. The influence of such factors as printing speed, ink amount on the rollers, temperature, relative humidity and kind of washing-up solvent has been studied. A program for further research on ink flying is also given.

APPARATUS AND METHOD FOR TESTING INK FLYING. GFL TESTING METHOD 6 G 4. Anonymous. Grafiska Forsknings-laboratoriet, Meddelande NR 40, March 1958, pages 24-29, 6 pages. (In Swedish). A description of an apparatus for testing ink flying developed by the Graphic Arts Research Laboratory is given. The testing procedure is also presented.

STATIC ELECTRICITY IN PAPER AT GRAPHIC PROCESSES. Anonymous. Grafiska Forsknings-laboratoriet, Meddelande NR 40, March 1958, pp. 13-23, 11 pages. (In Swedish). Many troubles caused by static electricity can arise in printing and book-binding plants, etc. The nature and causes of static are first briefly discussed. Different methods and instruments for detecting and measuring and different means for reducing and displacing static electricity are described. Finally some results of practical measurements on printing presses are given.

HIGH-SPEED, DIRECT-READING GLOSSMETER. J. G. Schreckendgust and D. M. Gowing. Journal of the Optical Society of America, Vol. 48, No. 4, April 1958, pages 241-245, 5 pages. A high-speed, direct-reading glossmeter which measures specular reflectance at 20°, 60° and 85° angles has been developed. This instrument employs a direct parallel beam at each viewing angle, and utilizes an efficient optical system and compensated barrier cell circuits to activate a stable positioning servo-

mechanism. The barrier cell circuitry combined with adjustable receptor apertures provide good linearity. Gloss values in ASTM units are read directly from the counter dial to the nearest 0.1 unit. Experience with glass, ceramic, and organic polymer films on flat surfaces has shown that repetitive measurements can be made five times faster and with greater reproducibility than with commercially available instruments. The eighteen instruments in current use demonstrate its suitability as both a laboratory and production control instrument.

ELECTRICAL CHARGE OF PIGMENTS IN VEHICLES. G. Florus and K. Hamann. Farbe und Lack, Vol. 62, No. 6-7; Paint and Varnish Production, Vol. 48, No. 5, April 1958, pages 49-51, 91, 4 pages. Inorganic pigments are positively or negatively charged or neutral, depending on the suspension medium. Organic pigments have a specific charge which is independent of the medium. Addition of wetting and flow agents can change the electrical charge of inorganic pigments, if an appropriate binder is selected. Here is an intimate relation between the charge and the dispersion of pigments, so that there exists a relation between the electrical charge of the pigments and the hiding, gloss, flow, and critical pigment volume of systems containing these pigments.

*METHOD OF CONTROLLING INK MISTING. U. S. Patent 2,842,053. Application January 23, 1957, Serial No. 635,714. Vincent S. de Marchi, assignor to Interchemical Corp., New York, a corporation of Ohio. Official Gazette, Vol. 732, No. 2, July 8, 1958, page 352. 1. The method of controlling ink misting occurring on a high speed roller couple in which ink is being transferred from one roller of the couple to the other, which comprises forcing into the advancing nip of the roller a stream of gas at a velocity, at the bite of the nip where the ink film separates, between somewhat greater than the peripheral speed of the rollers, and 3 times that speed.

LITHOGRAPHY - GENERAL

THREE COLOR PRINTING, Part 17. Stanley Goldsmith. American Printer and Lithographer, November 1957, pages 44-6, 3 pages. After testing job is ready for production. Article describes short run proving methods and cost of materials and

equipment.

ESTIMATING INKS. Phillips N. Piper. The National Lithographer, Vol. 64, No. 12, December 1957, pp. 14-16, 3 pages. A method of estimating ink requirements based on a set of absorption curves for various stocks. Normal per cent coverage for ten types of copy are given and illustrated. Ink coverage is expressed as the number of pounds per one hundred square inches per one thousand sheets. According to the per cent coverage a factor is read from the absorption graph and multiplied by the area of one leaf and the number of thousand copies. Data given is for black inks. Percent increase for other colors is given for Opaque, Semi-Opaque colors, and for Gold Ink, as average values.

Comment: Author does not give source or method for determining absorption curves. He gives one curve for high gloss, hard finish stock, which according to our experience is inadequate.

PROBLEMS IN STEPPING UP TO FOUR COLOR OFFSET PRESSWORK. W. A. Goldsmith. Graphic Arts Monthly, Vol. 29, No. 8, August 1957, pp. 124-9, 4 pages. A few "job planning" considerations for running multicolor work on a four color press.

PRE MAKEREADY ON 4-COLOR OFFSET PRESSES. Charles Latham. Graphic Arts Monthly, Vol. 29, No. 8, August 1957, pp. 68,70,72,74,76,78, 6 pages. Set-up time is saved by getting as much of the set-up work done in advance as possible. Pressmen work as team, get tools, inks, paper set ready to roll in advance.

OFFSET LITHOGRAPHY ON ALUMINUM FOIL. R. H. Lucas. Graphic Arts Monthly, Vol. 30, No. 6, June 1958, pp. 66,68,70,72,74,76, 6 pages. The operating conditions which are peculiar to foil lithography can be summarized as follows:

1. Special offset inks are required.
2. Store foil stock flat and avoid storage in high humidity.
3. Do not run light cut stock on small presses.
4. Use bimetallic plates.
5. Design artwork for a foil medium.
6. Set up stacking limitations for various grades and caliper of stock used.

7. Press speeds vary between 75% to 100% of paper speeds, depending upon ink-lay and coverage.

8. Use absolute minimum of water to avoid emulsification.

9. Allow opaque white inks to dry prior to multicolor work.

10. Avoid dirt and foreign particles to contact the surface of the foil.

11. Excessive impression will emboss the foil.

THE ART DEPARTMENT IN AN OFFSET PLANT. F. G. McInnis. Graphic Arts Monthly, Vol. 30, No. 3, March 1958, pp. 82,84,86,88,90,92, 6 pages. Tips on organizing, locating, supplying and maintaining an art department in an offset plant. Environment and human relations most conducive to increased productivity are discussed.

10 N. E. EXPERTS DISCUSS THEIR THEORIES ON 3-COLOR LITHOGRAPHY. Anonymous. New England Printer and Lithographer, Vol. 20, No. 12, January, 1958, pp. 98-100, 103, 4 pages. Survey of 10 printing plants. 20 questions asked and answered by representative of each plant. Most prefer to work from transparencies, so do handwork, some use temperature controlled sinks. Methods in each plant discussed briefly.

GRAPHIC ARTS - GENERAL

RUN-OF-PAPER COLOR FOR DAILY NEWSPAPERS. PART IV. THREE VS. FOUR COLOR PROCESS AND PHOTOGRAPHY.
Vernon R. Spitaleri. Printing Equipment Engineer, Vol. 87, No. 5, February 1957, pp. 39-42, 4 pages. Advantages of three color over 4 color process for use with ROP is discussed. Recommend 3 color process because it is faster and less costly. Curtis one-shot color camera is diagrammed and discussed along with Curtis Color Analyst. Both the Curtis Separation Printer and the Strobo Research Color-splitter are mentioned.

RUN-OF-PAPER COLOR FOR DAILY NEWSPAPERS. PART III. ART AND COPY PREPARATION. Vernon R. Spitaleri. Printing Equipment Engineer, Vol. 87, No. 4, January 1957, pages 45-6, 67-8, 4 pages. Simplicity is stressed in detail and tone values. Art copy, Colotone, fake color, transparencies and direct separations are discussed. The Warnecke Color Process of color dyed dot positives is diagrammed.

THE MCCORQUODALE GRESHAM PROCESS FOR COLOUR PHOTOGRAVURE. D. C. Gresham. The Journal of Photographic Science, Vol. 5, No. 4, July-August 1957, pp. 89-93, 5 pages. In the conventional photogravure process, printing is carried out from etched cylinders in which the printing areas are recessed below the surface. The image is separated into small cells which vary in depth, in accordance with the tone value to be printed, but have substantially constant area throughout the tone range. There are definite advantages in using a system in which both the depth and area of the printing cells are varied and, as an example of this, the Dultgen process is described. A further advance has been made from a finished continuous tone positive by reversal processing. Both the continuous tone and the screen positive are then used to produce a printing cylinder.

SUBJECTIVE EVALUATION OF QUALITY OF HALFTONE BLOCKS. Anonymous. Grafiska Forsknings-laboratoriet, Meddelande NR 40, March 1958, pp. 3-12, 10 pages (In Swedish). By subjective evaluation a jury of photo-engravers ranked a number of halftone blocks, made from the same photographic original, in quite another order than printers, who printed the same blocks. The material was studied at the Graphic Arts Research Laboratory, where pair comparison was used in ranking several different sets of prints, but nor in this way any correlation was found with the photo-engravers' evaluation. From thorough microscopic studies of the blocks and the prints it seemed probable that certain faults in the dot formation, specially connections in the highlights and too small pin-holes in the shadows had effected the rejection of the low-ranked prints.

RUN-OF-PAPER COLOR FOR DAILY NEWSPAPERS. PART V. ENGRAVING. Vernon R. Spitaleri. Printing Equipment Engineer, Vol. 87, No. 6, March 1957, pp. 77-79, 113, 4 pages. The methods used by the Miami (Fla.) Herald to engrave three and 4 color plates for ROP color are discussed. The camera men are instructed to make negatives in accordance with a master graph.

DANGER IN THE DARKROOM. Anonymous. Printing Equipment Engineer, Vol. 87, No. 11, August 1957, page 81. Article from National Safety Council discusses danger

of static electricity in darkroom. Need to have equipment grounded to prevent electric shock. Fire hazard from paper and other trash and smoking in darkroom.

THE HASSING ELECTRONIC ENGRAVING MACHINE. R. V. Cannon, Process, March 1958, pp. 87-9, 3 pages. Halftone letterpress printing plates are cut in metal or plastic at the rate of 780 dots per second. A triangular or square dot may be produced. Photolitho film negatives may possibly be speeded to 2,000 dots per second. Future development plans include color scanning.

*XEROGRAPHIC DEVELOPING APPARATUS. U. S. Patent 2,759,450, October 25, 1955. R. G. Vyverberg, Assigned to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 3, March 1957, page 145. A powder-cloud generator, that is suitable for forming a dense cloud of developing particles having a charge opposite to that of the electrostatic latent image on the xerographic plate, consists of a powder-agitator blade and an impeller blade mounted on a single vertical shaft with means for high-speed motivation. This generator is coupled to cloud chambers of various geometrical designs, e.g., an inverted cone, which have means for holding the xerographic plate.

*XEROGRAPHIC DEVELOPER COMPOSITION. U. S. Patent 2,753,308, December 22, 1952. R. B. Landrigan, Assigned by mesne assignments to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 3, March 1957, page 146. An electrophotographic developing powder, that is easily cleansed from the xerographic plate and melts below 350°F., comprises an intimate mixture of particles, from 2 to 20 μ in diameter, of a rosin, modified, phenol-formaldehyde resin, 5 to 10 percent of a pigment, e.g., carbon black, and 5 to 45 percent of polyvinyl butyral. The preparation consists of one to eight parts rosin to each part of phenol-formaldehyde base, and it has a ring-and-ball melting point of about 142° to 149°C.

*ELECTROSTATIC PRINTING PROCESS. U. S. Patent 2,735,785, July 20, 1953. H. G. Greig, Assigned to Radio Corporation of America. Monthly Abstract Bulletin, Vol. 43, No. 4, April 1957, page 197. In the powder development of an electrostatic image, using the color-forming reaction of U. S. Patent 2,735,784 (see preceding abstract), between a zinc-containing material, e.g., zinc oxide, and a

resin containing vinyl and chloride radicals, e.g., polyvinyl chloride, one of the reactants is used as the electroscopic developing powder; the other is incorporated in the sensitive surface. This process needs no separate adhesive to fix the powder to the printing base.

*ELECTROSTATIC PHOTOGRAPHIC PRINTING. U. S. Patent 2,758,525, December 30, 1953. A. J. Moncrieff-Yeates, Assigned to Radio Corporation of America. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, pp. 406-7, 2 pages. A method of electrostatic printing comprises (1) placing a thin layer of developer powder, e.g., carbon black, upon the upper surface of a photo-conductive insulating layer, e.g., selenium, supported upon a lower electrode and spaced from an upper electrode; (2) simultaneously applying a unidirectional electric field, e.g., about 3200 v. per inch, between the electrodes; and (3) projecting a light image upon the photoconductor to charge the developer particles, which move upwards in the electric field and become attached to an electrically insulating surface, e.g., paper, covering the upper electrode, to form a visible image. A negative image corresponding to the above remains on the unilluminated areas of the photoconductor.

*ELECTROSTATIC CLEANING OF XEROGRAPHIC PLATES. U. S. Patent 2,752,271, October 5, 1955. L. E. Walkup and H. E. Carlton, Jr., Assigned by mesne assignments to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 406. Residual developing powder remaining on an electrophotographic plate after transfer of the developed image to a receiving sheet is removed by applying a negative electrostatic charge to the photoconductive insulating layer to eliminate the residual, positive charge, and rapidly brushing the surface to remove the developing powder.

*ELECTROPHOTOGRAPHIC PROCESS. U. S. Patent 2,745,327, May 12, 1952. O. J. Mengali, Assigned to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 406. An electrophotographic process is described that provides increased photographic speed and spectral sensitivity. It uses a xerographic plate comprising a photoconductive layer coated from a vitreous uniform mixture of about 0.1 to 10

percent tellurium and 99.9 to 90 percent selenium, on a conductive base, e.g., aluminum, the layer having a dark resistivity of at least 10^{14} ohm-cm. and being capable of retaining an electrostatic potential of 300 v. or more for at least 10 minutes.

*ELECTROSTATIC PHOTOGRAPHIC PRINTING. U. S. Patent 2,758,524, December 30, 1953. M. L. Sugarman, Jr., Assigned to Radio Corporation of America. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 406. A method of electrostatic printing comprises (1) placing a thin layer of developer powder, e.g., magnesium silicate, upon the upper surface of a photoconductive insulating layer, e.g., selenium, coated on a lower electrode and spaced from an upper electrode; (2) simultaneously producing a unidirectional electric field, e.g., of about 4 to 8 kv. per inch, between the electrodes; and (3) projecting a light image upon the photoconductor to charge the developer particles, which move upwards in the electric field, become discharged on contact with the upper electrode, fall back to the photoconductor, and then become recharged in order to undergo repeated cycles of motion. The electric field and illumination are maintained until a lateral movement accompanying these oscillations deposits the particles on the unilluminated areas of the photoconductor to form a visible image.

*APPARATUS FOR ELECTROSTATICALLY CHARGING IMAGE SURFACES IN ELECTROPHOTOGRAPHY. U. S. Patent 2,774,921, April 23, 1953. L. E. Walkup, Assigned by mesne assignments to Haloid Co. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 407. An apparatus for electrostatically charging a xerographic plate consists of a charging electrode made of a pliable, continuous, conducting sheet with a resistance in excess of 10^{4} ohms per square centimeter of surface area and a means for moving this electrode over the surface of the xerographic plate. One edge of the sheet is connected to a suitable power supply; the other is in contact with the electrophotographic plate. The image surface is uniformly charged with potentials of 200-2000 volts, which are substantially less than those used in a corona charger.

*MECHANISM FOR ELECTROSTATIC IMAGES. U. S. Patent 2,761,416, January 2, 1953. C. F. Carlson, Assigned to Battelle Development Corp. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 407. The developing unit for producing electrostatic images consists of two coaxial disks pivoted for rotation about a common axis, around which moves a web of photoconductive material on a flexible support, e.g., anthracene-impregnated paper, carrying an electrostatic image. Electrostatic developer is introduced into a concave space that is formed and cascades over the image areas as the web moves.

*METHOD OF FIXING ELECTROSTATIC POWDER IMAGES. U. S. Patent 2,776,907, July 18, 1952. C. F. Carlson, Assigned to Battelle Development Corp. Monthly Abstract Bulletin, Vol. 43, No. 7, July 1957, page 408. The electroscopic powder used to develop an electrostatic latent image can be fixed to the support by exposure to the vapor of a solvent, e.g., trichloroethylene, for either material. A permanent bond is formed between the powder, e.g., asphalt, and the support layer, e.g., a plastic film, when either is rendered tacky by absorption of the solvent.

DU PONT TO MAKE PHOTOSENSITIVE PLASTIC ENGRAVINGS IN THREE TYPES. Anonymous. Inland Printer, Vol. 140, No. 5, February 1958, pp. 54-5, 2 pages. Du Pont's experimental photosensitive plastic (photopolymer) printing plates could be exposed and processed in 15 minutes. The new plate has a layer of photosensitive plastic and a metal support. This plastic is sensitive to ultraviolet light and is hardened by the direct action of such light. The hardening occurs through the entire thickness of the plate.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - NOVEMBER 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

MASKING, COLOR SEPARATION FOR TRANSPARENT AND REFLECTION COPY. John M. Lupo, Jr. Modern Lithography, Vol. 26, No. 7, July 1958, pp. 28-33, 122, 7 pages. Filter factors are explained, along with color temperature of light, and Hue, Value, and Intensity of color. Table showing exposures, Density Range and Gamma of a set of separation negatives is included. D log E curve is explained. Balanced separation negatives are discussed. The term masking is defined. Charts showing positive and negative mask systems are shown. Types of masks and their uses are mentioned. These are as follows:

Positive mask

Negative mask

Highlight mask

Undercolor removal mask

LTF Color Chart is mentioned in connection with ink hue and purity.

PHOTOGRAPHIC SENSITIVITY. J. W. Mitchell. Journal of Photographic Science, Vol. 6, No. 3, May/June 1958, pp. 57-80, 24 pp. Abstract. A general account is given of a new and comprehensive theory of the nature and formation of the photographic latent image. The difficulties which are experienced in the application of the Gurney-Mott theory to a number of aspects of latent image formation and photolysis are first outlined and it is pointed out that they arise principally from the fact that recombination between electrons and positive holes was not considered by these authors. The new theory is then presented together with such experimental evidence as is available to support the successive stages which are postulated. Attention is drawn to the possible role of crystal imperfections in photographic sensitivity and a new approach to the treatment of dye sensitization is suggested which removes a number of outstanding theoretical difficulties. The

account is fully illustrated with photomicrographs, diagrams and energy level diagrams which have not been included in previous general papers. Four basic principles which may serve to focus attention on important features of the mechanisms of photochemical change in silver halide crystals are formulated in the concluding section.

PHOTOTYPESETTING. Anonymous. American Printer and Lithographer, Vol. 139, No. 6, June 1958, pp. 21-25, 5 pages. Phototypesetting and related photo-lettering methods have been cast as sturdy protagonists in dramatic industry-wide developments. A composing room in film has become a reality for offset-lithography. In future years, photo composing may also enter into partnership with letterpress. Here, many currently available models are reviewed, Fotosetter, Linofilm, Monophoto, ATF Typesetter, Friden Justowriter, Filmotype, Photon, Typro, Vari-Typer, Protype, Commercial Rectograph, Teletypesetter, Artype, Fototype.

ACME SCANNER INTRODUCED FOR COLOR SEPARATION. Anonymous. Gravure, Vol. 4, No. 7, July 1958, pages 26-27, 2 pages. Announcement is made of the first commercial sale of an Acme Color Separator to the Buffalo Courier-Express, by Acme Teletronix, Division of NEA Service Inc., 1200 W. Third St., Cleveland. This new equipment scans either transparent or opaque 8 x 10 copy in 30 minutes to produce a set of color corrected continuous tone negatives or positives. The amount of color correction is adjustable.

MEASUREMENT OF COLOR DENSITY. Jacqueline M. Fetsko. Gravure Technical Association Bulletin, Vol. IX, No. 1, June 1958,pages 51-54, 4 pages. The author describes experiments which showed that the measurement of color density varied with illuminating and viewing angles. For good correlation to estimates made by observers, photo-electric measuring instruments should illuminate and view the sample in the same manner as used by the observers.

A NEW COLOR SCANNER - THE "SCANATRON". J. F. Crosfield. Gravure Technical Association Bulletin, Vol. IX, No. 1, June 1958, pp. 67-70; 4 pages. The

Scanatron uses one cathode ray raster as fine as 1000 lines per inch, beam split to scan three color separation negatives. Four positives are made separately in 40 minutes. A new development control instrument, the Gammatron is also described.

THE EFFECTS ON THE SCREEN DOT'S SHAPE CAUSED BY THE RULING RATIO OF HALFTONE SCREEN. Yosimiti Amano. Japan Printer, Vol. 41, No. 4, 1958, pp. 68-73, 6 pages (in Japanese). It must be equal the width of black line and white line on the halftone screen. But often, it is found that some halftone screen has the different ratio between black line and opening. In fact, on the unequal width screen (black lines are narrower about 10%), there are quite different variation compared with the regular screen dots. (1) It owe to the transparent area, so being compared these screen to regular screen, the screen distance is quite affected by the area of transparent parts of screen, I found. (2) On the other hand in the regular screen (same width black and white), there are also slight difference in behaviour of the dot formation between 65-line and 133-line screen. By these facts, the quantity of light-flux contribute the formation of the screen dots, then also the variation of the dot formation phase is caused by the transparent area of screen, I believe. Understanding of these facts, it will be the key of the resolving of the theory of halftone dots. Author's abstract.

*FLOW TYPE COPYING CAMERA. U. S. Patent 2,837,966. October 19, 1953, Serial No. 386,934. Francis T. Arnold and Selah S. Brewster, Jr., Carroll B. Collins and George P. Crouse, assignors to Peerless Photo Products, Inc., Shoreham, N. Y., a corporation of New York. Official Gazette, Vol. 731, No. 2, June 10, 1958, page 320. 1. In a copying camera, the combination of a conveyor belt, a light source above said belt, an opaque platen between said light source and said belt having a transverse slot therein, a lens, an adjustably positioned reflector means to direct light rays from said slot toward said lens along a path of variable length comprising three mirrors, two of said mirrors mounted at right angles to each other

and at forty-five degrees to said third mirror and said light rays, a film holder comprising an aperture, a film supply roller, a film take-up roller and a film drive roller, a drive motor for said conveyor belt and said film drive roller, and a drive speed reduction device in the drive connection between said motor and said film drive roller.

*SENSITIZATION OF ALUMINUM WITH SILVER HALIDES. German Application 1,029,669, 57b 5/01. July 30, 1955. M. Schenk. Ansco Abstracts, Vol. 18, No. 6, June 1958, page 236. Aluminum is given electrolytically an oxide layer of .012 mm thickness and covered with finely divided silver by impregnation with a gallic acid solution followed by ammoniacal silver nitrate. The silver is then oxidized by a solution containing potassium ferricyanide with or without permanganate. Such silver ferricyanide plates are not light-sensitive and keep for years. By immersion for a few seconds into a solution of alkali metal bromides or chlorides they are sensitized to a far greater extent than by chlorine gas or hypochlorite solutions.

THE H P K AUTOSCAN. G. E. Messenger. Process, Vol. 65, No. 772, April 1958, pp. 127-8, 2 pages. A device that may be described as a reproduction camera for color work. The general illumination of the copy is replaced by a scanning light. The intensity of the scanning light is varied to influence the exposure on the plate. Variable point light makes possible considerable control of color separation under color removal, and tone rendering. Produces color and tone corrected separation negatives direct on films or plate.

LUDLOW READY TO PLACE BRIGHTYPE CONVERSION PROCESS ON MARKET. Anonymous. Printing Magazine, Vol. 82, No. 5, May 1958, pages 86-7, 2 pages. Brightype is a method which converts any combination of letterpress printing material directly into photographic images for any printing process. The chief distinguishing feature of Brightype, as compared with other methods of converting relief images for photomechanical reproduction, is the bypassing of the proofing operation.

Brightype's basic end product is a transparent film positive made in one direct step by photographing type and plates in a relief form. (illustrated)

A REVIEW OF PHOTOCOMPOSITION SYSTEMS. Anonymous (staff prepared). Printing Production (PEE), Vol. 88, No. 9, June 1958, pages 64-68, 5 pages. A factual summary of each of the phototypesetting and photolettering machines for printers and lithographers. The machines illustrated and described include the ATF Typesetter, Fotosetter, Linofilm, Monophoto, Photon, Filmotype, Foto-Riter, Headliner, Protype and the Typro machine.

PLANOGRAPHIC PRINTING PROCESSES

*FILMS FOR PHOTOCHEMICAL REPRODUCTION. German Patent 832,545, February 25, 1952 (Cl. 57d, 201). Kalle & Co., Akt.-Ges. (Wilhelm Neugebauer and Martha Tomaneck (nee Kunitzer), inventors). Chemical Abstracts, Vol. 52, No. 10, May 25, 1958, column 7919. Cinnamylidenemalonic acid (I) is used in the production of photomechanical pressure forms to great advantage. In place of I, its salts or substitution products can be used. I is dissolved in water or an organic solvent, e.g., an alcohol or a mixture of water and organic solvent, and applied to a metal foil or plate. The addition of a light-resistant colloid is not necessary. The metal foil or plate bearing the film is illuminated with a large amount of short-wave light. The exposed foil or plate is used to prepare, for instance, flat pressure forms. It is first smeared with an oil-soluble dye and then wiped off with a dilute alkaline solution, such as Na_2CO_3 or Na_3PO_4, or if necessary, with a dilute acid, e.g., H_3PO_4, or with a buffer solution. In this way, the dye is removed from the exposed portion and is fixed in the unexposed areas. Thus, I 1 in alcohol 80 is mixed with NaCl 2 in water 10 parts, applied to oxidized Al foil, exposed to light, rubbed with an oil-soluble dye, and developed with 3% H_3PO_4. The positive print is suitable for offset-printing.

*PRINTING PLATES MADE WITH DIAZO COMPOUNDS. German Patent 875,437, May 4, 1953 (Cl. 57d, 2_{01}). Kalle & Co. Akt.-Ges. (Wilhelm Neugebauer, August Rebenstock, Jakob Barthenheier, and Oskar Sus, inventors). Chemical Abstracts, Vol. 52, No. 10, May 25, 1958, column 7919. A layer of light-sensitive, water-insoluble esters or amides of sulfonic or carboxylic acids of 2-diazo-1-naphthol or 1-diazo-2-naphthol forms, after exposure to light under a transparent positive, a positive azo dye image when treated with alkaline reagents and fatty inks. An azo component (e.g., aromatic polyhydroxy compounds) may be incorporated into the light-sensitive layer or added with the developing agents. No coupling agents are needed, however, if the layer is exposed, before or after copying, for a short time to ultra-violet light; thus, the diazo compounds are partially decomposed and yield water-soluble or alkali-soluble carboxylic acids which are effective coupling agents. In an example, an anodically oxidized Al foil is coated with a solution of 2 parts of the adduct of 2-diazo-1-naphthol-5-sulfonyl chloride and sarcosine ethyl ester and 0.5 part phloroglucinol in 100 parts EtOH. The foil is exposed to light under a transparent positive. Subsequent treatment with NH_3 vapors gives a colored image which is washed with a mixture of 1 volume 50% aqueous $CaCl_2$ and 1 volume EtOH in order to remove the decomposed parts of the layer. After rinsing with water, the fatty ink is applied. The resulting printing plate may be used for offset printing.

*LIGHT-SENSITIVE LAYERS FOR OFFSET PRINTING. German Patent 903,529, February 8, 1954 (Cl. 57b, 10). Kalle & Co. Akt.-Ges. Chemical Abstracts, Vol. 52, No. 10, May 25, 1958, columns 7918-19. Unsaturated aldehydes of the general formula $R(CR':CR'')_x$- CHO, in which R is an aromatic or heterocyclic radical (substituted or unsubstituted), R' and R'' are H, halogen, alkyl, or aryl radicals and x is 1 or 2, are used to provide light-sensitive layers for offset prints. Examples of suitable unsaturated aldehydes are cinnamaldehyde, 2-nitrocinnamaldehyde, 4-nitro-cinnamaldehyde, 4-methoxycinnamaldehyde, piperonylideneacetaldehyde, β-(2-furyl)acrolein,

α-furfurylidenepropionaldehyde, 1-phenyl-1, 3-pentadien-5-al, α-chlorocinnamaldehyde, and α-phenylcinnamaldehyde. The aldehydes are dissolved in an organic solvent and applied to an Al sheet which is provided with an oxide layer, then dried and exposed to light. Polymerization inhibitors, e.g., phenols, quinones, and dyes of the thiazine class are used to prevent degradation. When the sheets are treated with dilute acid and then with a fatty pigment, the pigment adheres to the areas exposed to light.

*METAL MASTER PHOTORESISTS. U. S. Patent 2,819,164, January 7, 1958. Theo. T. Boersman (to North American Philips Co., Inc.) Chemical Abstracts, Vol. 52, No. 9, May 10, 1958. Poly(vinyl butyral) resists useful in photomechanical applications are described. Thus, 5 g. poly(vinyl butyral) (butyral 70, vinyl alcohol about 18, acetate about 7%), of 400 centipoises viscosity in 10% EtOH was dissolved in 100 g. of a 1:1 by volume EtOH-iso-PrOH mixture. The resulting solution was mixed with a mixture of 50 ml. of a similar EtOH-iso-PrOH mixture, 50 ml. monoethylglycol ether, and 2 ml. 10% aqueous $(NH_4)_2Cr_2O_7$ solution. The fresh mixture was applied to Cu-plated stainless steel. The dried resist was exposed under a stencil, and the unexposed resist was removed with EtOH. The exposed Cu was removed by etching with 40% $FeCl_3$. The resulting plate offprints on paper on inking. Changing the etch depth gives plates suitable for rotary intaglio printing. With resin plates overlaid with thin metal, printed circuits can be produced. On stainless steel Cu-coated plates, photo-outlined areas can be Ni-plated to give contrasting decor patterns. Glass vacuum-coated with Al gives partially reflective plates. Sensitizers other than Cr^{6+} salts, e.g., diazo or diazonium compounds, can be used. Poly(vinyl butyrals) of degrees of polymerization giving 200-1000, preferably 400-600 centipoises, in 10% EtOH can be used. Their ink receptivity is enhanced by incorporation of colophony or shellac.

*LIGHT-SENSITIVE DIAZO-TYPE MATERIALS. German Patent 929,590, June 30, 1955 (Cl. 57b, 12_{05}). Kalle & Co. Akt.-Ges. (Oskar Sus and Manfred Grundkotter, inventors). Chemical Abstracts, Vol. 52, No. 6, March 25, 1958, columns 4366-4367. Light-sensitive

diazotype materials (I) were prepared by use of monodiasonium derivatives of p-phenylenediamine, in which the undiazotized amino group was secondary or tertiary. I have the general formula CIN:NAN(R)$(CH_2)_n$XR' where A is a substituted benzene ring, X is O, S, or SO_2, R is H or an alkyl group of 1-3 C atoms, R' is a substituted aromatic radical, and $_n$ is 2 or 3. The diazonium compounds were used as $ZnCl_2$ double salts. I (especially suited to wet development) displayed high coupling activity which could be further accelerated by substituents on R', e.g., halogen, or by enlarging this group. By coupling with polyhydroxybenzenes, e.g., phloroglucinol and (or) resorcinol, black to brown images were obtained in neutral, weakly alkaline or acid solutions. By substitution in the phenylene group the color of the image was altered; positive substituents tended to make the color lighter. Inorganic or organic acids and their salts, and salts of aromatic sulfonic acid act as stabilizers for such light-sensitive layers.

*BIMETALLIC LITHOGRAPHIC PLATES. German Patent 928,988, June 16, 1955 (Cl. 48_a, 7). Birger Karlguist. Chemical Abstracts, Vol. 52, No. 7, April 10, 1958, column 5171. A smooth, rotating drum is cathodically coated with Cu and Cr under varying conditions, so as to deposit a hard dense Cu film, on it a porous coarse Cu film, and finally a dense smooth nonporous Cr coating. In an example, the drum is made a cathode in a bath containing H_2SO_4 85 and $CuSO_4$ 300 g./l. H_2O. A smooth, dense Cu film 0.25-0.60 mm. thick is deposited at 8 v. and 35 amp./sq.dm. A 2nd Cu film of desired porosity and 0.05-0.075 mm. thick is then deposited in the same bath at 9 v. and 45 amp./sq.dm. in 20 minutes. The drum is then coated with Cr in a bath containing CrO_3 475 and H_2SO_4 3.25 g./l. H_2O. To ensure adherence of Cr to Cu, the conditions are 50-5°, 60-5 amp./sq.dm., and 12 v. for 15-45 seconds, followed by 30 amp./sq.dm. for 10-15 minutes to deposit a film $>$ 0.0025 mm. thick.

PAPER AND INK

SUMMER WEATHER PROBLEMS: PAPER. Rohn Blohm. Graphic Arts Monthly, Vol. 30, No. 5, May 1958, pp. 66-74, 9 pages. A discussion of the influence of higher temperatures and humidity conditions on printability of lithographic papers and inks. The use of the LTF Paper Hygroscope is recommended. Hanging of paper or running through a press blank are methods of conditioning paper when summer conditions are severe. Use of multi-unit presses rather than single unit presses reduces the time that paper is in contact with pressroom air in multicolor printing. Fountain solution acidity adversely affects ink drying more in conjunction with high humidity. The problems of paper makers in meeting RH equilibrium conditions are discussed.

THE ANALYSIS OF PAINTS, LACQUERS, AND VARNISHES. N. W. Hanson. Journal of the Oil and Colour Chemists' Association, Vol. 41, No. 3, March 1958, pp. 203-257, 55 pages.

Synopsis

INTRODUCTION. Separation of pigment from medium: separation by dispersion on salt.

ANALYSIS OF SOLVENT MIXTURES. Separation of Solvents. Procedure for solvent analysis.

ANALYSIS OF PIGMENT MIXTURES. Preliminary tests. Separation and identification of pigments: extraction with 3 percent acetic acid; with concentrated hydrochloric acid; preparation of solution from anti-fouling compositions; analysis of the filtrates; of the insoluble residue.

ANALYSIS OF THE MEDIUM. General tests: dry heating; heating with solid caustic soda; with syrupy phosphoric acid; fluorescein and phenolphthalein tests; element test; saponification value. Tests for natural resins. Colour reactions for cellulose nitrate. Solubility tests. Special identification tests. Detailed analysis: alkyd resins; non-alkyd oil types; cellulose derivatives; etc.; vinyl and acrylic polymers; polyamides and polyurethanes;

amide-formaldehyde resins. Identification of minor components in emulsion paints.

SOME EXAMPLES OF PAINT AND MEDIUM ANALYSIS. Determination of pigment content. Analysis of a pigment mixture; of a solvent mixture; of a resin solution; of varnish films; of a black stoving car finish; of a plasticiser for cellulose acetate; of some vinyl-type resin solutions.

LABORATORY INVESTIGATIONS INTO THE DIMENSIONAL STABILITY OF PAPER. Lars Nordman (Oy Keskus-lab.-Centrallab. Ab, Helsinki). TAPPI, Vol. 41, 1958, pp. 23-30; Chemical Abstracts, Vol. 52, No. 12, June 25, 1958, column 10575. Moisture expansivity (I) of paper was taken as a measure of its lack of dimensional stability. I is defined as the change in length of a strip of paper as its moisture content changes from the amount which is in equilibrium with an atmosphere of 65% relative humidity (R.H.) to the amount which is in equilibrium with an atmosphere of 50% R.H.; it is a requirement of the test that the paper be in moisture equilibrium with air of 80% or more R.H. before it is exposed to the 65% R.H. atmosphere. Handsheets of various beaten and unbeaten pulps, dried with varying amounts of restraint on shrinkage during drying, were checked for I. There was a direct linear relation between the amount of shrinkage on drying and I, regardless of the kind of pulp, the degree of beating, the kind of beating apparatus used, additives such as wet-strength resins and gums, and the restraint on shrinkage during drying. Pulps and beaters differed in their ability to develop tensile strength without developing excessive shrinkage on drying. Handsheets of beaten, bleached sulfite pulp were stretched at various stages of drying. The greater the amount of permanent stretch imparted to the sheet, the lower was its I; the dryer the sheet was when it was stretched, the more effective was the stretch in reducing I. This implies that tight draws in the drier section of the paper machine, and particularly at the dry end, are more effective from a dimensional stability point of view than similar draws in the press section. Samples were taken from the press section of a paper machine, dried without restraint on shrinking, and compared with

dry-end samples with respect to I. I was very similar in the machine and cross directions for the wet-end samples, but in the dry-end samples cross-direction I was 2-2.5 times as great as machine-direction I.

CONTROLLING FLUID PROCESSES WITH CONTINUOUS VISCOMETERS. Alan Beerbower. Control Engineering, Vol. 5, No. 6, June 1958, pages 107-112, 6 pages. A review of the basic equations, definitions, and concepts of viscometry, and a description of available commercial instruments suitable for continuous process control. Bingham plastic, dilatant, and visco-elastic materials are discussed. The practical application of viscometers is mainly for meeting customer specifications of "body," "texture," "feel," or "tack." Drawings of the Fisher and Porter Viscorators, Brookfield Viscometran, Norcross Viscometer, Hallikainen Viscometer, and Bendix Ultra-Viscoson are given, and the features and limitations of these instruments discussed. The problems of temperature compensation and shear rate control are considered crucial for process control viscometers.

LITHOGRAPHY - GENERAL

PRINTING ALUMINUM FOIL. James T. Trousdale. Graphic Arts Monthly, Vol. 30, No. 5, May 1958, pp. 42-51, 10 pages. Production of aluminum foil more than doubled since 1952. Three-fourths is used in packaging. Various properties of foil are listed. It is claimed that transmission through a .0035" film is negligible. Foils are coated with nitrocellulose or vinyl lacquers before printing to give an adhesive base for ink. The viscosity of ink is critical in printing foil by gravure. Lithography on foil laminates can be carried out with 130-150 screens, but set-off is a difficult problem, and even more so in the case of letterpress. Albuminum plates are not recommended for foil printing.

Comment: A problem in use of foils as vapor or liquid barriers in packaging is pin hole leakage which occurs frequently.

KEEPING PACE WITH PROFITS, PART 6. C. W. Latham. American Printer and Lithographer, Vol. 139, No. 6, June 1958, pp. 36, 39-40, 3 pages. Today, more than

ever during the last ten years we are interested in cost. We are interested in reducing prices without losing profits. We cannot resort to cheaper and inferior products or reduce maintenance of equipment. But what we can do something about is waste of time. Incorrect allocation of work within the camera, stripping and platemaking departments may not increase total production hours but very obviously increases cost.

IN PLANT PRINTING DEPARTMENT. Bekir E. Arpag. Industrial Photography, Vol. 7, No. 5, May 1958, pp. 48, 88, 2 pages. Article introduces a new series designed to provide company photographer with the fundamental information necessary to set up an in-plant printing department. This first article reviews the development of the lithographic process and discusses in general the various types of plates used.

GRAPHIC ARTS - GENERAL

XEROGRAPHIC PRINTING TECHNIQUES. Jeremy Hunt. Modern Lithographer and Offset Printer, Vol. 54, No. 6, June 1958, pages 11-15, 5 pages. The economy, speed and simplicity of making small offset plates by the Xero X equipment is discussed. Runs on paper masters of up to 10,000 impressions can be expected. A cost breakdown and a discussion of the quality and type of work for which the equipment has been used covers many questions which concern the litho printer who may be interested.

*ELECTROPHOTOGRAPHIC PRINTING PROCESS. U. S. Patent 2,829,050 96/1 February 23, 1952-April 1, 1958. W. C. Huebner to The Huebner Company. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 193. Images are projected from a film onto the printing material which has been given a positive or negative charge. The exposure reverses the charge and a negatively charged smoke or vapor is deposited on the positively charged areas of the printing material. An apparatus is sketched but nothing is disclosed about the materials to be used. - 13 process claims.

*LIQUID DEVELOPMENT OF ELECTROSTATIC IMAGES. British Patent 793,331. February 8, 1955-April 16, 1958. General Dynamics Corporation. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 194. The processing employs a liquid dispersion of

finely divided opaque particles (carbon, colored resins, glass, .01-40 μ in diameter) in an insulating liquid contained in a grounded conducting tank. A roller with conducting core and semiconducting surface, preferably having a resistance of 10^4 - 10^5 ohms, serves as applicator. Depending on whether the roller core is grounded or not, either a positive or a negative image will be developed if an electrophotographic plate carrying a latent image with its support connected to the ground is passed between the applicator and another roller. - 3 method and apparatus claims.

*ELECTROSTATIC IMAGE COPYING METHOD. U. S. Patent 2,838,997. October 30, 1953. Serial No. 389,246. Alexander J. Moncrieff-Yeates, Princeton Junction, New Jersey, assignor to Radio Corporation of America, a corporation of Delaware. Official Gazette, Vol. 731, No. 3, June 17, 1958, pp. 589-90, 2 pages. 1. A method of producing a plurality of powder images from a single electrostatic image which comprises repeating the following steps for each of said powder images: charging in one polarity of charge a layer of powder having a bulk resistivity of at least 10^{10} ohm-centimeters, attracting the powder to a surface of a dielectric body, bringing the electrostatic image having the opposite polarity of charge into closely spaced relation to the charged powder on the dielectric body, for each of said powder images interposing a dielectric copy sheet between the electrostatic image and the charged powder; and applying a unidirectional electric field in a direction for attracting said powder toward said electrostatic image between the charged powder and the electrostatic image to attract the powder toward the electrostatic image and to deposit said attracted powder on said copy sheet for producing a powder image said electric field being in addition to the electric field produced by the electrostatic image.

*XEROGRAPHIC CAMERA. U. S. Patent 2,831,409. July 18, 1955, Serial No. 522,540. William E. Bixby and Robert S. Kriss, assignors to the Haloid Company, Rochester, N. Y., a corporation of New York. Official Gazette, Vol. 729, No. 4, April 22, 1958,

page 792. 1. A xerographic camera comprising a light-tight box-like structure having a lens element mounted in one wall thereof, a shaft journaled in said structure for rotation about an axis parallel to the focal plane of the lens element, plate holding means arranged on said shaft to support a xerographic plate in the focal plane of the lens element, a second shaft journaled in said structure for rotation about an axis parallel to the focal plane of the lens element, a xerographic plate charging unit fixed on said second shaft, a development assembly supported on a second wall of the box-like structure, means to rotate the second shaft to move the charging unit into and out of charging relationship with a plate supported in the plate holding means, and means to rotate the first shaft to move the plate holding means to a position to place a plate supported therein in operative relationship to the development assembly.

HOW LAMINATION CAN INCREASE SALES AND MARKETS. Gerard M. Milano. Graphic Arts Monthly, Vol. 30, No. 5, May 1958, pp. 28-38, 224, 12 pages. Lamination is distinguished from varnishing and lacquering with plastic coatings since the plastic is bonded over the printed matter, and imparts new physical properties to the product. The sheet-to-sheet platen method or roll fed method may be used. Adhesives dispersed in solvents are used. Tests cited in which gloss in light colored areas of 70# coated litho stock was increased by 93% by lamination with .00088" cellulose acetate film. Scuff, ear, and fold strength are enhanced. The publishers of juvenile books are the largest users at present because of the soil proof feature of lamination. Other uses are cited, as well as nine practical notes concerning use.

RUSSIA ACTIVE IN GRAPHIC ARTS RESEARCH. Anonymous. The R. & E. Coordinator, Vol. 4, No. 2, April 1, 1958, pp. 6-7, 2 pages. This article highlights the equipment, personnel and various departmental projects of the Soviet Union's three graphic arts research institutes.

*LIGHT-SENSITIVE POLYVINYLBENZOPHENONES. U. S. Patent 2,831,768 96/115. January 19, 1956-April 22, 1958. S. H. Merrill, C. C. Unruh, and E. M. Robertson to Eastman Kodak. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 191. Polyvinylbenzophenone, obtained by the condensation of polystyrene with benzoyl chloride, itself or derivatives of it on exposure to light form insoluble relief images. Their sensitivity can be greatly increased by the addition of 12-hydroxystearic acid, its ethyl ester, p,p'-dimethylaminobenzhydrol, or borneol. - 6 photographic element claims.

*PHTHALOCYANINE PIGMENT PRINTS. British Patent 792,438. April 20, 1955-March 26, 1958. DuPont. Ansco Abstracts, Vol. 18, No. 5, May 1958, page 190. The patent employs phthalocycanine intermediates as described in French 1,068,092 and 1,094,376 and US 2,662,895-7 which are soluble in organic solvents. When coated together with oxalic or an α-hydroxy carboxylic acid, e.g. mandelic acid, on paper or cloth and exposed through a negative to light of the wavelengths 300-489 mμ, they are reduced to the phthalocyanine by the weak reducing properties of the acid. The pictures are fixed by an aqueous-alcoholic solution of hydrochloric or another strong acid. (Also German Application 1,026,170). - 20 process and product claims.

HERE IS SIMPLIFIED QUALITY CONTROL. Warren L. Rhodes. Printing Production, Vol. 88, No. 10, July 1958, pp. 36-38, 3 pages. A lot of the material which has been written about quality control is the result of people joining the movement because of its popularity, without realizing what it is all about. The author's purpose in preparing this article is to introduce some of the concepts of statistical quality control, and to explain how the techniques may be used.

PRODUCTION CONTROL FOR SMALL PLANT. D. J. Wickizer. Inland Printer, Vol. 141, No. 3, June 1958, pages 43-6, 4 pages. A good practical schedule procedure that keeps tab on every job. All the forms for underwriting, job planning, scheduling and filing are illustrated and described in detail. This system works nicely for a load of 200 or more jobs in process.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - DECEMBER 1958

PHOTOGRAPHY, TONE AND COLOR CORRECTION

MASKING METHODS IN OFFSET LITHOGRAPHY. G. A. Mitchener and L. E. Lawson. The Association of Printing Technologists (Press Release) No. 1, May 1, 1958, page 4. This paper relates to conventional masking methods and it is intended to show in simple terms that if the color densities of the inks are measured it is possible to determine the masks to be used, and density range required for the color separation negatives and masks. It was stated that there is at present no satisfactory method of photographic masking for fully correcting the black printer.

SELECTION OF PHOTOGRAPHIC FILTERS FOR COLOUR REPRODUCTION. K. H. Schirmer. Process, 64; September 1957, pp. 343-47; Monthly Abstract Bulletin, Vol. 44, No. 2, February 1958, page 62. The Fogra Institute, in Germany, has developed a set of three color-separation filters, and a panchromatic filter for making the black printer. These filters are for use with "flat-copy" originals, and they are stated to be lighter than those commercially available, so that shorter exposures are possible. It is claimed that color separation is as good as, or better than, that obtainable from the commercial filters.

*STRUCTURE AND METRIC RELATIONS OF THE COLOR GAMUT PRODUCED BY THREE SUBTRACTIVE COLORS. E. Hellmig. Agfa, Leverkusen-Munchen, Vol. I, Springer Verlag, Berlin, Germany, 1955, pp. 170-98; Monthly Abstract Bulletin, Vol. 44, No. 2, February 1958, page 86. Color gamut is of considerable significance in color photography and in color-reproduction processes, and is defined in the article as "the continuous partial region of color space which is filled by all those colors which can be obtained by subtractive mixing from three primary colors, these colors, i.e., yellow, magenta, and cyan, being variable to an unlimited degree in concentrations". The author raises the question whether certain interrelationships in structure which are common to all these color gamuts can be detected in spite of

the possible large diversity in subtractive color gamuts, such as may exist also in the structure of the color gamuts of pigments. It is shown that all subtractive color gamuts exhibit a common conformity in structure that is largely independent of the spectral properties of the primaries, in spite of their diverse internal structures and external forms. This results from the condition which is also considered to be fulfilled practically always in the case of real dyes, namely, that a subtractive dye mixture in suitable concentrations acts as a nonselective neutral. A number of diagrams illustrate the text, and eleven references are cited.

*FOUR COLOUR TECHNIQUE. A. M. Billam. Modern Lithography London, Vol. 53, No. 5, May 1957, pp. 16, 18, 20-2; Printing Abstracts, Vol. 12, No. 8, August 1957, page 521. Good colour reproduction by four-colour photo-litho is possible with care; such work is being produced in Germany at normal production speeds and some details are given of the methods used.

WHAT ABOUT 3-COLOR PROCESS? LEADING NEW ENGLAND EXPONENTS GIVE VIEWS. J. Spencer, B. Laroque, and M. Rabin. New England Printer and Lithographer, January 1957, pp. 88-9 (470 Atlantic Avenue, Bolton 10, Mass.) (D853.23/16,552). Printing Abstracts, Vol. 12, No. 8, August 1957, page 521. A question-and-answer form of article on the Kodak short-run three-colour litho process.

ANALYSIS OF HALFTONE PROCESS BY FOURIER SPECTRUM. Kazuo Sayanagi. Japan Printer, Vol. 40, No. 6, 1957, pages 56-61, 6 pages (in Japanese). Studies on Halftone process by Fourier analysis are given. Three thories of halftone process are combined as shown in equation (6'), by the description in spatial frequency domain.

THE XENON-ARC PROJECTION LAMP. Warren B. Reese. Journal of the Society of Motion Picture and Television Engineers, Vol. 67, No. 6, June 1958, pages 392-396, 5 pages. Xenon-arc lamps have inherent properties as to spectral energy, luminous efficiency, electrical operation, and geometrical characteristics which make them attractive from both a technical and an operational point of view as a new light

source for motion-picture projection. Practical experience with European installations is reported, supplementing the report immediately preceding in this issue of the Journal.

FURTHER THOUGHTS ON 'VARA' COLOUR-MASKING. PART 3. Frank H. Smith. Modern Lithographer and Offset Printer, Vol. LIV, No. 1, January 1958, pages 12-4, 3 pages. A simple diagram is given to help visualize the pairing of masks and separations. 'Vara' masking is the European equivalent of two-stage masking and the correction of the magenta printer is detailed in this installment of the series.

THE EVALUATION OF OPTICAL IMAGES. George C. Higgins and Fred H. Perrin. Photographic Science and Engineering, Vol. 2, No. 2, August 1958, pages 66-76, 11 pages. It is shown that the quality of a photograph cannot be indicated adequately by any single number. The point and the line spread-functions are defined and the relation of the latter to resolving poser, acutance, and the sine-wave response are outlined. Resolving power and acutance are shown to be independent of each other and are explained on the basis of the character of the spread function. The significance of the power spectrum and the manner in which it can be used to design a photographic system, even in the presence of granularity, are shown. A practical example of the application of some of these procedures to predicting the appearance of photographs is presented.

*COLOR TOLERANCES IN THE GRAPHIC ARTS INDUSTRY. K. H. Schirmer. Federation des Associations de Techniciens des Industries des Peintures et Encres d'Imprimerie de l'Europe Continentale, Brussels, Belgium, 1956 (received 1958), pages 135-9 (in German). Monthly Abstract Bulletin, Vol. 44, No. 6, June 1958, page 264. In graphic-arts color measurement, consideration of appropriate color tolerances may simplify production methods and permit better color matching. This is the case in the printing of packing material, with certain standard colors serving as a characteristic firm symbol, for which the customer very often requires very accurate color

matching. The proper choice of inks in polychrome work is also a consideration. In both cases, tolerances should be established in such a manner that the purchaser of the printed package or the person who looks at the color printing will be satisfied with his color-retention ability. Methods are demonstrated for evaluation of the allowable color tolerances.

PLANOGRAPHIC PRINTING PROCESSES

DICHROMATED COLLOIDS---I. L. P. Green and H. L. Howard. Process, Vol. 65, No. 774, June 1958, pages 207-10, 4 pages. The authors, in an effort to determine why different bichromate salts are preferred as sensitizers in the different graphic arts processes, studied the effects of pH on the dried coatings. They found that ammonia in the coating solution was quickly lost by the dried coating and did not adversely affect its sensitivity. However, a non-volatile alkali, such as sodium or potassium hydroxide, when used in the coating solution caused the dried coatings to have very low sensitivity to light. Further articles on their studies are planned.

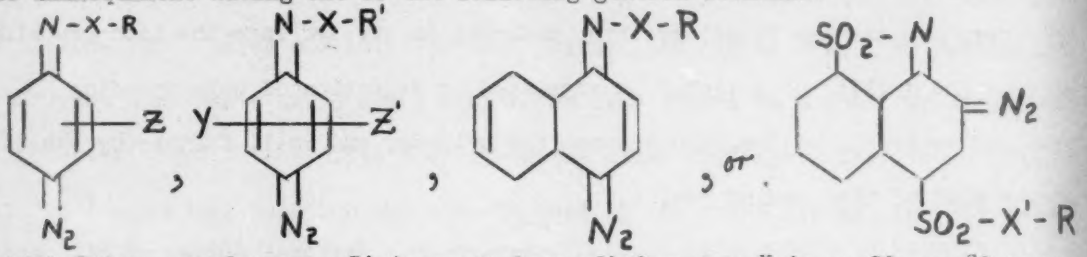
FEATURES OF LIOPHIL AND HYDROPHIL SURFACES OF BIMETAL PLATES. Pretsch Erno. Kozlemenyek, Mitteilungen Bulletins, Budapest, 1957, pp. 45-54 (10 pages) (in Hungarian). As the author knows, measurements of figure comparison of liophil and linophobic quality of metal surface were not carried out in our country. The author finds actual and necessary to start with the research work in this direction. It is necessary because lately various methods of bimetal production have acquired great practice. The author using his practice helped a lot in the development of the research work.

*SOME PHYSICO-CHEMICAL ASPECTS OF LITHOGRAPHY. W. H. Banks. Preprint Association Printing Technologists Conference, 1957, pp. 16-28. Printing Abstracts, Vol. 12, No. 7, July 1957, page 441. The behavior of metal surfaces in aqueous solution, the wettability of metals by oils in the presence of water, the sensitising and desensitising action of damping solutions, the necessity for water in lithography and the ink-water interface (the influence of surface moisture and the effects of emulsification) are discussed.

MODERNIZATION OF GRAINING OF OFFSET PRINTING PLATES. Robert Benedek. Kozlemenyek, Mitteilungen Bulletins, Budapest, 1957, pages 61-64, 3 pages. Article in Hungarian. New technology of graining of offset printing forms is described. The essence of the technology is the following: a press plate is fitted onto a cylinder with which a marking-roll turns round. A corresponding loading device gives over to roll the grinding material in uniform way. As the cylinders are turning round, graining material is pressed into the lithographical plate. The quality of graining is regulated by selection of corresponding grinding material, by pressure between the cylinder and roll, further by the size of the slot of the loading device.

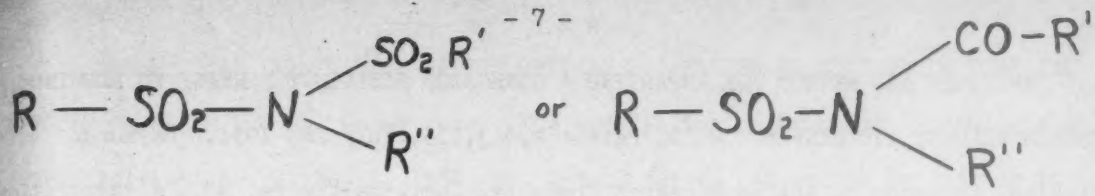
STUDIES OF ELECTROLESS PLATING. Anonymous. National Bureau of Standards, Technical News Bulletin, Vol. 42, No. 5, May 1958, pages 86-7, 2 pages. With the electroless process of plating, a nickel coating is deposited only on certain catalytic metals such as iron, nickel, cobalt and palladium. Non-catalytic metals may be made catalytic by immersion in a dilute solution of palladium chloride, which coats the metal surface with an almost visible film of catalytic palladium. Electroless nickel deposits are not pure nickel but consist of a nickel phosphorus alloy containing about 8% phosphorus. This process involves the reduction of hot nickel salt solutions, such as the chloride or sulfate, with pure sodium hypophosphite. An organic acid such as glycolic or citric acid is added to the bath as a combined buffering and complexing agent. Studies on the effect of pH on the rate of nickel deposition indicated a pH of 4 to 4.5 to be the most useful. The organic acids used for buffering and complexing were found to have specific effects on the rate of deposition. Hydroxyacetic (glycolic) acid yielded the highest rate with a stable bath composition. Certain substances classified as catalytic poisons, raised the rate of deposition when used in concentrations of about 1 ppm. As with organic acids, the effect of these substances reached a maximum at certain concentrations. Thiourea and potassium thiocyanate gave the most significant effect.

*LIGHT-SENSITIVE MATERIAL FOR PHOTOMECHANICAL REPRODUCTION. U. S. Patent 2,759,817, August 5, 1952. M. P. Schmidt; O. Sus. Assigned by mesne assignments to Azoplate Corp. Monthly Abstract Bulletin, Vol. 43, No. 9, September 1957, page 533. A light-sensitive material for making printing plates comprises a support, e.g., zinc, aluminum, or paper, subbed with a mineral filler, e.g., clay, and an adhesive, e.g., casein, bearing a thin, uniform layer of a light-sensitive diazo iminoquinone having one of the following general formulas:



in which R is an aryl group; R' is an aryl or alkyl group; X is an SO_2 or CO group; X' is an oxygen atom, N-alkyl, or NH group; Y is an alkoxy or methyl group where R' is an aryl group, or an alkoxy group where R' is an alkyl group; Z is an alkyl or halogen group; and Z' is a methyl, halogen, or alkoxy group where R' is an aryl group, or an alkoxy group where R' is an alkyl group, e.g., N-(4'-methylbenzene-1'-sulfonyl)-1-imino-2,5-diethoxy-4-diazo-1,4-benzoquinone. The process for using this material in photomechanical reproduction is also claimed. Corresponds to Swiss 307,356 and British 723,382.

*DIAZOTYPE MATERIAL AND PROCESS. French Patent 1,031,581, addition 65,465. Filed in Germany, December 14, 1951. B. Ostersetzer; W. Mauss, assigned to Kalle and Co. A.-G. Monthly Abstract Bulletin, Vol. 43, No. 9, September 1957, page 531. A method for making positive-working lithographic printing plates suitable for photomechanical processes involves (1) coating a support, e.g., grained aluminum, with a light-sensitive layer containing a water-insoluble or diazo-ortho-quinone sulfonamide having one of the general formulas:



in which R is a diazo-ortho-quinone radical; R' is an organic radical completed by a CO or SO_2 group to form an acyl radical; and R'' is an acyl, aliphatic, alicyclic, aromatic, or aralkyl radical completing a simple or condensed cyclic system, e.g., N,N-di-5-sulfonyl-2-diazo-1,2-naphthoquinone aniline; (2) exposing the coating to a positive transparency; (3) developing the exposed coating in a dilute alkaline solution, e.g., a 1 percent trisodium phosphate solution; (4) treating it with a plate-etch, e.g., nitric acid; and (5) inking the plate to provide a positive printing image. Composition claims are included. Corresponds to Swiss 316,606.

*LIGHT-SENSITIVE DIAZO COMPOUND AND BINDER COMPOSITION. U. S. Patent 2,848,328, May 4, 1955. Martin Hepher, assignor to Eastman Kodak Company, a corporation of New Jersey. Official Gazette, Vol. 733, No. 3, August 19, 1958, page 756. 1. A light-sensitive coating composition comprising a mixture of (1) casein, (2) an aqueous dispersion of a latex selected from the group consisting of natural rubber latex and synthetic rubber latex, and (3) an aryl azide compound selected from those represented by the following general formula:

$$N_3---R---CH{=}{=}{=}CH---R_1$$

wherein R represents a monocyclic arylene group of the benzene series, R_1 represents a member selected from the group consisting of a carboxylic acyl group and an azidoaryl group of the benzene series, provided that said aryl azide compound contains at least one substituent selected from the group consisting of a sulfo radical, a carboxyl radical, and alkali metal salts of said radicals, said composition being adapted to produce a light-sensitive coating in which an image can be formed by exposure to light and washing in an aqueous solution.

*MIXTURE AND METHOD FOR IMPARTING A CORROSION RESISTANT SURFACE TO ALUMINUM,, ALUMINUM ALLOYS, AND SILVER. U. S. Patent 2,843,513, July 28, 1954. Raymond Stricklen, assignor to Allied Research Products, Inc., Baltimore, Md., a corporation of Maryland. Official Gazette, Vol. 732, No. 3, July 15, 1958, page 735. 21. An aqueous acid bath for coating aluminum and alloys thereof in which aluminum is the predominant ingredient, of the type wherein the essential coating-producing ingredients are hexavalent chromium and a soluble fluorine-bearing compound in coating-producing proportions; containing, as an addition agent, a quantity of boron (calculated as boric acid) in excess of the amount required for reaction with all of the fluorine present.

PAPER AND INK

*INFLUENCE OF TEMPERATURE AND RELATIVE HUMIDITY ON THE DRYING OF GLOSS PRINTING INK. D. Read. Australian Pulp and Paper Industry Technical Association, Vol. 11, No. 3, November 1957, pp. 49-55; discussion: 55; Bulletin of the Institute of Paper Chemistry, Vol. 28, No. 10, June 1958, page 1409. Studies on the effects of atmospheric temperature and humidity and of the moisture content of a coated manila board on the drying time of a gloss-type printing ink showed that temperature is the most important factor and that its influence far exceeds that of either R.H. or moisture content of the base material. 6 figures and 4 references.

*SOME REMARKS ON PAPER CONDITIONING. F. W. van Damme. Offset, Vol. 12, No. 6, March 23, 1957, pp. 111-2; Printing Abstracts, Vol. 12, No. 7, July 1957, page 408. Facts concerning the moisture content of paper and its effects are recalled. The use of the hygrometer, sword hygrometer and psychrometer is mentioned.

*FACT AND FICTION. Anonymous. Offset, Vol. 12, No. 6, March 23, 1957, page 110. Printing Abstracts, Vol. 12, No. 7, July 1957, page 394. The relative humidity in an offset printing shop should be about 55 percent and the paper should be preconditioned in equilibrium with a relative humidity of about 63 percent. Reasons for this are given from I.G.T. Mededelingenblad W-1.

THEORETICAL EXAMINATION OF THE OPTICAL PROPERTIES OF CONTINUOUS TONE INK PATCHES ON PAPER. S. B. Chemburkar. The Association of Printing Technologists (Press Release) No. 1, May 1, 1958, pp. 2-3, 2 pages. In colour monitoring it is ink film thickness which must be controlled. Thickness is proportional to the transmission density of the ink film but it is reflectance of the ink patch which is measured, and the purpose of the investigation is to establish the relationship between the two. It is a complex problem involving such factors as surface reflectance, multiple internal reflection, and light scatter in the paper. The work was extended to include the problems of "proportionality" and additivity failure in multi-color printing.

SURVEY OF LITERATURE ON THE DIMENSIONAL CHANGES OF PAPER WITH CHANGES IN HUMIDITY. F. W. Lorey. TAPPI, Vol. 41, No. 5, May 1958, pages 233A-256A, 24 pages. This article first covers the bibliography of equipment for measuring the dimensional changes by various methods under either laboratory or actual pressroom conditions. This is followed by a discussion of the data on the magnitude of the changes as found by various workers. In one case, Weber and Cobb (21) reported that of fifteen papers tested in actual printing, seven papers contracted while eight expanded. Next the literature dealing with the use of additives for decreasing dimensional changes is reviewed. With some exceptions, coatings and fillers in general reduce the dimensional change more or less. One exception is the use of wax which was reported to have no effect and the case where glassine and greaseproof papers were found to have greater expansion than regular paper. Fairly heavy concentrations of some additives are required, such as a study where 20% or more of neoprene was found to increase the dimensional stability. In another case impregnation with 50% glycol aconitic acid monoester was found to eliminate 95% of the expansion and contraction of fiber board. The balance of this review deals with the literature covering studies of the effect of fiber characteristics such as purity, length of beating, cooking or bleaching upon the dimensional stability of various papers, and finally of sheet characteristics. Sixty-seven literature references are appended.

THE USE OF GLASS FIBERS IN THE PAPER INDUSTRY. R. Peteri. TAPPI, Vol. 41, No. 5, May 1958, pages 228A-232A, 5 pages. According to laboratory tests (Centre de Recherches, St. Gobain, France) addition of as little as 1% of glass fibers brings an appreciable improvement in tear strength of paper, particularly in the cross direction. Development of such papers is therefore attractive for prevention of web breaks. Fibers in the 10 mu range are economically feasible for such application. Addition of glass fibers may make the use of short fiber pulps possible for many applications where their use is now limited. Papers with high percentages of glass fiber, although mechanically weak have outstanding electrical properties. The use of melamine resins to improve strength and handling properties of the sheet is described. The use of glass fibers may improve draining of wet-beaten pulps, and enhance dimensional stability in printing.

STIFFNESS MEASUREMENTS OF PAPER. A. H. H. Van Royen. TAPPI, Vol. 41, No. 5, May 1958, pages 194A-196A, 3 pages. For measuring the bending resistance of paper several instruments are already available. Two more have recently been developed: the N.B.S. stiffness tester (Carson) and the Sharmon tester. Comparative tests made at the Fibre Research Institute T.N.O. (Delft, Netherlands) on a number of papers with these new instruments, the Bekk tester, and also by hand gave a good correlation between data. The author prefers the Sharmon apparatus on the basis of theory and simplicity.

PAPER AND PAPERBOARD IN LITHOGRAPHY. R. F. Frederick. TAPPI, Vol. 41, No. 5, May 1958, pages 165A-167A, 3 pages. A paper presented at the meeting of the Ohio Section of TAPPI, March 13, 1958, giving view based on experience at the Lord Baltimore Press of Baltimore, Md. Although this printer has controlled atmospheric conditions, misregister is still a problem which arises from slight inaccuracies in cutting and creasing or from curled, baggy, or wavy stock. The latter is especially a source of trouble when printing board which comprises 80% of the stock used in this plant. In this case doubling occurs. Currently the most pressing problems are with offsetting and drying. More uniform paper is called for so that the doctoring of inks to meet

these problems can be reduced. Several advantages of lithography for the printing of paperboard are cited.

MODERN MANUFACTURING METHODS OF PRINTING INKS. M. Hartmann. Archives for Printing, Paper, and Kindred Trades, No. 2, 1958, pages 163-6, 4 pages. A brief history of the printing ink industry from the time of Gutenberg to the present with special reference to German contributions. The development of flushed colors is described, and the importance of newer wetting agents to this process indicated. The unexpected revival of the German chemical industry has increased the availability of new pigment colors.

TEST OF YIELDING OF PRINTING INKS. Dekany Istvan Janos. Kozlemenyek, Mitteilungen Bulletins, Budapest, 1957, pages 72-75, 4 pages. Article in Hungarian. This test of yielding is a part of broad research in printing inks. The tests are carried on by means of comparison from the practical point of view. It was stated, that:-1. It is possible to use a device to measure the consistence of printing inks flowing out under pressure from a narrow tube.-2. After getting of the constant data of the device the figures are suitable for the comparison.-3. With the help of these figures it is possible to draw the curves of yielding for various types of inks.

MAGNETIC INKS FOR ELECTRONIC SENSING. L. F. Miller, C. B. Blake. American Ink Maker, Vol. 36, No. 8, August 1958, pages 32-4, 3 pp. The placing of magnetic signals on the faces of bank checks by conventional printing of magnetic inks has been recommended by the American Bankers Association after a two year study of various methods for automated check sorting. "Reading" heads scan printed characterers which, since they have discrete magnetic flux patterns, result in a particular wave form for each character which is registered in the computer circuits. Voids in the printed image, irregular definition, splatter, smears, etc. can increase incidence of errors. Inks must be formulated to minimize these faults. They must not be diluted at the press, since the concentration of magnetic pigment (ferric or ferrosic oxides) may be criticals for good performance.

*APPARATUS FOR INDICATING AND/OR RECORDING THE STRUCTURE OF PAPER. U. S. Patent 2,844,068 - Application September 20, 1955. David J. Williams - Assigned to Australian Paper Manufacturers Ltd. Official Gazette 732, No. 4, July 22, 1958, p. 884. Apparatus for testing the structure of a moving sheet of paper after it has been formed, comprising: light sensitive means for producing a variable current representative of variations in the transparency of the paper; a light source for projecting a beam of light through said sheet of paper onto said light sensitive means; means for generating an alternating carrier current; a modulator for modulating said carrier current in accordance with the variations in said variable current to produce a modulated carrier current; control means for automatically maintaining the magnitude of said modulated carrier current at a level such as to compensate for variations in said variable current unrelated to the formation of the paper; a demodulator for demodulating said modulated carrier current to produce a component representative of variations in the transparency of the paper due to variations in the formation thereof; and indicating means for indicating the magnitude of said component thereby to obtain an indication representative of the formation of the paper.

*INK CONDITIONING EQUIPMENT FOR ROTARY LITHOGRAPHIC PRESS. U. S. Patent 2,843,040, August 17, 1954. Warren Childers, Houston, Texas. Official Gazette, Vol. 732, No. 3, July 15, 1958, pp. 611-12, 2 pages. 1. An ink conditioning device for use on lithographic presses comprising a housing having an air discharge outlet, a tubular shaft extending longitudinally through the housing and beyond the ends of the housing, means engageable with the shaft beyond the ends of the housing for supporting the shaft and housing with the outlet adjacent an inking roll of a lithographic press, said shaft having an opening within the housing in communication with the interior of the shaft and through which air may enter the housing, said opening being positioned to direct the air entering the housing away from the outlet and said housing being shaped to divert the air entering the housing toward said outlet.

METHODS FOR MEASURING CONTACT ANGLES ON FIBROUS MATERIALS. Per Ekwall and Owe Andresen. Paper and Timber, Vol. 40, No. 4a, April 1958, pages 173-6, 178-9, 181, 7 pages. Various methods employed in measuring contact angles are outlined briefly. Two groups of methods have been found suitable for measuring contact angles on fibrous materials. In this paper the practical performance of one of these groups of methods, the horizontal plate methods, is described in detail. The original method was introduced by Wakeham and Skau. A modification of the method which makes possible rapid and reliable measurements with very simple equipment has been developed and studied at the Institute of Physical Chemistry at the Abo Akademi. The method has proved to be of value in studies of the spreading of liquids on solid surfaces such as paper and fabrics.

METHODS FOR MEASURING CONTACT ANGLES ON FIBROUS MATERIALS. Per Ekwall, Henrik H. Bruun, and Pentti Lahtonen. Paper and Timber, Vol. 40, No. 4a, April 1958, pages 182-9, 8 pages. An apparatus for measuring contact angles conveniently and rapidly by liquid drop method is described. The two modifications of the drop method, the direct measurement of the contact angle and the evaluation of the base and height of the drop, are compared. The dependence of the value of the contact angle on the drop volume, the age of the drop, the evaporation and the roughness of the surface has been investigated. A large number of reproducible measurements can be made within a short period of time when the direct measurements are performed by the method developed at the Institute of Physical Chemistry of Abo Akademi; in this method relatively large drops are used and their volumes are successively increased by adding more water to the drop. This method has proved to be of value in studies of the wettability of different solid surfaces such as paper.

LITHOGRAPHY- GENERAL

*LITHOGRAPHIC PLATE DAMPENING ROLLER. U. S. Patent 2,778,093. N. A. Mack. Official Gazette, Vol. 715, No. 4, January 22, 1957, page 598. Printing Abstracts, Vol. 12, No. 7, July 1957, page 414. A lithographic dampening roller jacket

comprises a resiliently knitted textile fabric tube having integrally mounted on its exterior surface a cylindrical layer of microporous liquid-absorbent synthetic rubber sponge composition of uniform thickness, the fabric tube being expansible and contractible and adapted to be slid on and off the roller and having portions extending beyond both ends of the layer and which can be constricted over the ends of a cylindrical roller. The layer of sponge rubber is impregnated with polyvinyl acetate.

*DAMPENING SYSTEMS ON OFFSET MACHINES. H. B. Annunc. poligraf., No. 5, May 1957, pp. 17-9 (in Italian). Printing Abstracts, Vol. 12, No. 8, August 1957, page 499. A historical account of devices which have been developed for the purpose, starting from 1868, including some account of spray damping.

*DEVICE FOR APPLYING LIQUIDS TO CYLINDRICAL SURFACES. U. S. Patent 2,791,174. Faber and Schleicher A.G. Official Gazette, Vol. 718, No. 1, May 7, 1957, page 64; Printing Abstracts, Vol. 12, No. 11, November 1957, page 709. A cyclically actuated spray guard device for a moistening device for use with a rotary plate cylinder of a printing press includes an air nozzle, a liquid receptacle and a liquid retaining hollow cylinder of porous material mounted for rotation in the receptacle and encompassing the nozzle. The spray guard device comprises a guard member disposed intermediate of the nozzle and the porous cylinder and the rotary drive means supporting the guard member for rotation about the air nozzle in a peripheral orbit interrupting the jet of air from the nozzle in predetermined relative angular positions of the plate cylinder and the guard member for each revolution of the latter.

*THE pH OF THE DAMPING WATER AND THE DRYING OF THE INK. G. H. Haegens and J. H. Bitter. Offset, Vol. 12, No. 6, March 23, 1957, page 114 (in Dutch). Printing Abstracts, Vol. 12, No. 8, August 1957, page 485. Mr. Haegens justifies the use of Semper Clean in the water on offset presses by stating that it holds the water on the plate but does not attack the plate and prevents deposition of ink;

it also neutralises any possible acid in the paper. Semper Clean consists of an alkali combined with a colloid. Bitter explains why the drying time of the ink is slightly prolonged by the addition of Semper Clean.

*WHAT'S WHAT AND WHY IN LITHOGRAPHY. Anonymous. Canadian Printing Publication, Vol. 66, No. 5, May 1957, pp. 50-1, 100-8; Printing Abstracts, Vol. 12, No. 8, August 1957, page 521. Recommendations were made by a panel of speakers at the Toronto Club of Printing House Craftsmen on copy preparation (black and white and colour); dot-etching and colour correction; the pin point register system; standardization of developers, particularly in 'still' development for halftones; film assembly and platemaking; new materials and techniques available today; servicing of the printing machine; plates, ink, papers and makeready; and testing methods employed in pressroom.

*THE PHOTO-LITHO PLANT. Anonymous. Bull. tech., No. 2/3, July 1956, pp.45-50 (in French). Fachh. Chemgr., No. 2/3, July 1956, pp. 113-22 (in German). Printing Abstracts, Vol. 12, No. 8, August 1957, page 520. A detailed discussion is given of the types of equipment most suitable for specialized work in a large litho platemaking department.

EXPERIMENTAL STUDIES OF ROLLING IN RELATION TO CYLINDER COVERING ON LETTER-PRESS AND OFFSET PRINTING. H. A. Borchardt, R. H. Bromley, and S. R. C. Poulter. The Association of Printing Technologists (Press Release) No. 1, May 1, 1958, pp. 4-5, 2 pages. Investigations are being carried out at PATRA to study the effect of packing periphery on printing cylinders on the life of the plates and other printing elements. The packing is deformed as it rolls over the surface; slight slippage at the boundaries of the nip is inevitable and this will be a cause of wear on the printing surface. Experiments made so far with rubber packing layers have led to important conclusions regarding hardness and thickness of the material.

WHERE ARE WE GOING IN PRINTING PRESS DESIGN? R. P. Tyler. Pulp and Paper Magazine of Canada, Vol. 59, No. C, Convention Number, 1958, pp. 165-6, 2 pages.

A short statement by a representative of the Harris-Seybold Company, calling for continued development of better papers for lithography. The modern developments in press design, such as better inkers, and paper dampeners with infinite control are cited. Because of rising labor costs, the craft and art aspects of the trade are seen to decline in the future in favor of increasing automation. Economic urgency has already dictated pushing production speeds to the limit, and this calls for finer and more complex controls on the inking and dampening units of presses.

FOUNTAIN DOPE (COLUMN). John D. Payne. New England Printer and Lithographer, Vol. 21, No. 3, April 1958, pages 23-4, 2 pages. A description of several problems submitted by printers. One concerns blinding of plates where polishing was suspected. This condition was shown to be normal discoloration, the true cause of trouble being faulty press adjustment. A second problem describes the attempted use of extra pieces of packing under the blanket to correct weak solids. The result was complete loss of the image. Cutter dust resulting from cutting a sheet in two without back trimming is described as a common cause of trouble. The proper method of trimming is explained.

NEW METHOD OF TEST OF PRESS-COVERINGS BASED ON ELECTRICAL MEASUREMENT. Dekany Gyula and Nyiri Ferenc. Kozlemenyek, Mitteilungen Bulletins - Budapest, 1957, pp. 18-24, 7 pages (in Hungarian). Comparing packings with each other, we used complete deformation instead of the usual method of hardness test. On this purpose we have worked out a method based on static principles. A new electronical measuring device was designed too. The estimation of results has been done on the basis of the oscillogramms photo, which showed deformation curves of an acting covering.

WIPES. ML Staff Report. Modern Lithography, Vol. 26, No. 4, April 1958, pages 48-9, 2 pages. In place of rags in platemaking and press work in lithography, numerous disposable paper and cotton wiping materials and wiping towel services have become available. A brief description of the McGuire Towel Service, Litho Wipes,

Scott Wipers, and Webril Wiper is given, but no technical data on wet strength, absorbency, linting, etc. is reported.

WHAT'S AHEAD FOR PRINTING PRESSES? D. Ward Pease. Inland Printer, Vol. 141, No. 2, May 1958, pages 84-5, 2 pages. Rising costs, especially labor, make progress in press designs a necessity. All printing processes are improving while ink and paper manufacturers conduct more research. The big breakthrough in lithography depends upon some revolutionary development which will rapidly and automatically obtain and maintain ink-water balance. This will greatly eliminate the high waste of paper due to this trouble which is now one major disadvantage of the web offset press. It is also prophesied that the really durable bimetal plates may be put to more use to avoid the disadvantages of offset by using direct lithography.

INDIANA WEEKLY NEWSPAPER ADOPTS WEB OFFSET PROCESS. R. D. Walker. Inland Printer, Vol. 141, No. 2, May 1958, pages 86-8, 3 pages. A tabloid paper, with a circulation of 5600, uses a single-unit press and a matching collator. The web offset press, a product of G. Hantscho Co., N. Y., is a single unit 36" perfector. The six web collator unit is located in line with the delivery end of the press. To facilitate handling of the heavy rolls, an overhead electric hoist runs from along the press feed to the loading stations of the collator.

*CLEANING DEVICE FOR ROTARY PRINTING MACHINE. U. S. Patent 2,832,289, September 28, 1954. Lester F. Mitchell, and Edward J. Janke, assignors to Addressograph-Multigraph Corp. Cleveland, Ohio, a corporation of Delaware. Official Gazette, Vol. 729, No. 5, April 29, 1958, page 1030. 1. In a cleaning device for removing ink from the surface of a rotary printing machine drum, a main frame adapted to be mounted on a printing machine, a supplemental frame movably mounted therein, a cleaner roll rotatably mounted in the supplemental frame with its axis parallel with the axis of the drum, manually operable means to move the supplemental frame to move said roll into and out of frictional driving engagement with the drum

surface, means to apply a film of liquid ink solvent to said roll, said last mentioned means including a solvent applicator member coacting between a supply of the liquid ink solvent and said roll and engaging the latter, a wiper movably mounted in said supplemental frame and being spaced from said applicator member in the direction of rotation of said roll, and means under control of the operator to selectively press said wiper into engagement with said roll to prevent further transfer of solvent to the drum surface and to remove ink and solvent from said roll whereby the roll presents a clean dry surface to the drum, or to so coact with said roll as to permit a thin film of solvent to remain on the roll and be transferred to the surface to be cleaned.

*WASHUP ATTACHMENT FOR PRINTING PRESSES AND THE LIKE. U. S. Patent 2,847,935, December 26, 1952. Raymond Robert Richter, Assignor to the Dayton Rubber Company, a corporation of Ohio. Official Gazette, Vol. 733, No. 3, August 19, 1958, pages 653-4, 2 pages. 1. A washup device for cleaning a series of rotating cylinders in tangential contact comprising a mounting bar parallel to the rotational axes of said cylinders, a plurality of relatively short individual blade members anchored in closely spaced alignment on said mounting bar, means for positioning said mounting bar so that the blade members mounted thereon will be in substantially linear contact with the surface of one of said cylinders, and a draw bar adjustably anchored at each end of said mounting bar to control the linearity thereof.

*TWO COLOR OFFSET PRINTING PRESS. U. S. Patent 2,845,860, May 12, 1954. Luis Mestre, assignor to Lewfor Development Corp., N. Y., N. Y., a corporation of New York. Official Gazette, Vol. 733, No. 1, August 5, 1958, pages 73-4, 2 pages. 1. In a multicolor offset printing press the combination of a blanket cylinder to apply color designs to sheets and having an axis, a first plate cylinder cooperatively positioned with respect to the blanket cylinder approximately at the top thereof, damping and inking means above the first plate cylinder for damping and inking the latter, a second plate cylinder cooperatively positioned with respect to the blanket

cylinder approximately on a horizontal plane through the axis of the blanket cylinder, damping and inking means disposed on the opposite side of the second plate cylinder from the blanket cylinder for damping and inking the second plate cylinder, the plate cylinders to apply color designs on said blanket cylinder, an impression cylinder cooperatively positioned with respect to the blanket cylinder approximately diametrically opposite from the two plate cylinders, a sheet entrance path extending to the top of the impression cylinder, means for driving all of said cylinders together and at the same angular speed, means mounting the blanket cylinder for movement towards and away from the impression cylinder and the first plate cylinder, means mounting solely one of the plate cylinders for movement towards and away from the blanket cylinder, shifting means connected with the movable mounting means to separate the blanket cylinder from the impression cylinder and the first plate cylinder and to separate the movable plate cylinder from the blanket cylinder and restore them to cooperative position, and sheet-controlled means connected with the shifting means for effecting operation of the movable mounting means.

GRAPHIC ARTS - GENERAL

LIGHT SOURCES FOR COLOUR MATCHING. E. E. Miles and D. C. Peach. Penrose Annual, 51: 1957, pp. 145-149; Monthly Abstract Bulletin, Vol. 44, No. 2, February 1958, page 87. Although daylight is still the most widely used source of illumination for color matching, experience with artificial units has shown that, where a nonmetameric match is required, color-matching fluorescent tubes have come into widespread use because of their good color characteristics, high luminous efficiency, and convenient source shape. Where a very critical match is required, or where there is a fluorescent component in the sample, a filtered tungsten unit is appreciably better, but has the disadvantages of low luminous efficiency and high heat radiation. Where high efficiency is required, it is likely that a combined fluorescent and tungsten unit having an increased ultraviolet output and facilities

for varying the effective color temperature, to take into account any observer variations, will be found to meet the majority of requirements.

INK DENSITY MEASUREMENT AND COLOUR QUALITY CONTROL. G. S. Allen. Penrose Annual, 51: 1957, pp. 124-27; Monthly Abstract Bulletin, Vol. 44, No. 2, February 1958, page 67. In order to ensure a minimum of variation in the color of a multi-color printing-press run, the amounts of the inks transferred to the paper must be kept constant. The Crosfield Idotron is an electronic apparatus which has been designed for this purpose and which is being used on rotary web-fed presses, such as rotogravure machines. A photoelectric scanning head is mounted on the press close to the moving web, onto which solid color bars are printed from the cylinder. As the bars pass the bright spot of the head, the reflected intensity is altered and an impulse is fed into a set of electronic circuits whose function is (1) to eliminate irrelevant variations due to the instrument, (2) to provide synchronization with the printing cylinder so that only information from the bars is used, (3) to average the impulses over about six revolutions of the cylinder, and (4) to separate the signals from the various colors so that information about the behavior of the individual ink images is graphically and continuously recorded.

*ELECTRONIC MEASUREMENT AND CONTROL OF PRINTED COLOUR DENSITY. G. S. Allen. Preprint Association Printing Technologists Conference, 1957, pp. 1-15; Printing Abstracts, Vol. 12, No. 7, July 1957, page 451. The subject is discussed under: uses of colour variations and their visual effects, conditions affecting the discrimination of the eye, scale of monitor readings, variation of paper reflectance and description of the Idotron.

*PRINTED MAGNETIC RECORD TAPE. Umsthan Verlag, Stuttgarter Strasse 20-22, Frankfurt-am-Main, Germany. Unschau, 8, 1957, page 249 (in German). Printing Abstracts, Vol. 12, No. 7, July 1957, pp. 455-6, 2 pages. The printing ink contains magnetic particles and is printed on to a non-magnetic record carrier. The process places great demands on the printing technique, since great sharpness

of image is required. The original is applied to the printing cylinder in the form of a spiral line. Printing is effected on special paper in a broad web, which is slit into suitable widths after printing.

*AUTOMATIC INPUT FOR BUSINESS DATA PROCESSING SYSTEMS. K. R. Eldredge, F. J. Kamphoefner, and P. H. Wendt. Stanford Research Institute, Division of Engineering Research, Menlo Park, California, October 30, 1956. Printing Abstracts, Vol. 12, No. 7, July 1957, page 454. The inks contain ferrites commonly used for magnetic tape and the amount of pigment used is varied according to the printing process used so that, for example, litho prints are equally as effective as letter-press prints.

*NOW TESTING NEW PLASTIC LIGHT-SENSITIVE PLATE. Anonymous. Paper Trade Journal, Vol. 141, No. 12, May 27, 1957, page 21; Printing Abstracts, Vol. 12, No. 8, August 1957, page 527. The Photo Products Department of the Du Pont Co. has made substantial progress toward the development of a pre-sensitized, lightweight, flexible plastic printing plate. After exposure through a high contrast photo-graphic negative and washing in a simple water solution, the printing plate is ready for use. A relief of up to a 40 thousand is obtained. The manufacturer expects that field testing of these new plates will begin during 1957 and that commercial quantities should be available during 1959.

DEPENDENCE OF THE CONTRAST OF MOIRE PATTERNS ON THE COLORS OF THE PRINTING INKS. F. Pollak. The Association of Printing Technologists (Press Release) No. 1, May 1, 1958, pp. 1-2, 2 pages. There are two aspects of pattern in color printing; one is the geometry of the pattern and the other is the contrast of the colored inks. In general, pattern contrast is marked when two inks have appreciable density in the same spectral region. On the other hand, if the inks are reasonably transparent, and only one of them has appreciable density in a particular spectral region, then screen images can be printed at any angle without showing pattern. Thus in photolith, it is not advisable to print a pink and a red at the same angle, unless by masking or retouching one can be sure that no pink is printed in red areas.

PRESENT STATE AND TREND OF FUTURE DEVELOPMENT OF THE VARIOUS PRINTING TECHNIQUES IN THE U.S.A. C. H. Ringe. Archives for Printing, Paper, and Kindred Trades, No. 2, 1958, pages 196-207, 6 pages. An evaluation of the various printing processes based on 1952 figures which show that the development of the industry did not keep up with the rate of growth of gross national product. Percentage of total rates spent for research in the Graphic Arts was only 0.017% as compared with the next higher figures of 0.6% and 0.4% for the petroleum and primary metals industries respectively. Production by Offset is given as 23.5% as compared with 73% by Letterpress, and 3.5% by Gravure. Predictions are made that few newspapers will shift to printing by web offset, and that the use of gravure will continue to increase in packaging.

WATERCOTE FOR PROOFING COLOR JOBS. Bernard Gasser. Modern Lithography, Vol. 25, No. 7, July 1957, pages 41-2, 2 pages. Watercote as a medium for proofing a color job before plates are made. Method of making a color proof on watercote material.

AN ALMANAC OF 75 YEARS OF U.S. PRINTING PROGRESS. Victor Strauss. Inland Printer, Vol. 141, No. 2, May 1958, pages 62-6, 5 pages. A chronology of the printing industry's equipment, materials and organizations from 1883 to 1958.

ELECTRONICS VS. PHOTOGRAPHY FOR COLOUR ENGRAVING. W. B. Hislop. Process, Vol. 64, No. 768, December 1957, pages 460-3, 4 pages. Printed comparison is shown of 4 color reproduction by Colour Klischograph versus photographic color separations corrected by positive masks. Discussion of production details and time are given.

*REPRODUCTION PROCESS. U. S. Patent 2,732,286, January 24, 1956. Georg Propostl (to Robert Bosch G.m.b.H.). Chemical Abstracts, Vol. 50, No. 10, May 25, 1956. A base material, such as paper or polystyrene, is coated with a 0.02-2 layer of metal, such as Zn, Cd, or Al, by vacuum evaporation or cathodic disintegration. A relief printing plate is impressed on the metalized sheet at a pressure of 0.1-10 kg./sq.cm. The material to be reproduced can also be applied to the metalized sheets

by means of an ordinary typewriter. Even fingerprints can be reproduced after pressing the fingers against the sheet through a thin sheet of paper. A duplicate is formed by subjecting the treated sheet to a developing agent, such as vapor of Br or NH_3. The process may also be used for the preparation of printing plates.

*REFLEX THERMOPRINTING. U. S. Patent 2,844,733, Application April 2, 1956. Carl S. Miller and Carl A. Kuhrmeyer, Assigned to Minnesota Mining and Manufacturing Co. Official Gazette 732, No. 4, July 22, 1958, p. 1044. A method for the production of permanent facsimile copies of a graphic original having a visible graphic pattern on a visibly contrasting background, said pattern and background being differentially reflective of intense radiant energy, said method comprising placing over the graphic original a heat-sensitive rapidly reactive copy-paper capable of absorbing a substantial proportion of said energy, and irradiating the original through the copy-paper with said intense radiant energy at sufficiently high intensity and for sufficiently short time to provide a visible change in the areas of the copy-paper corresponding to the more reflective areas of the original while avoiding visible change in areas corresponding to the less reflective areas.